

Service Manual

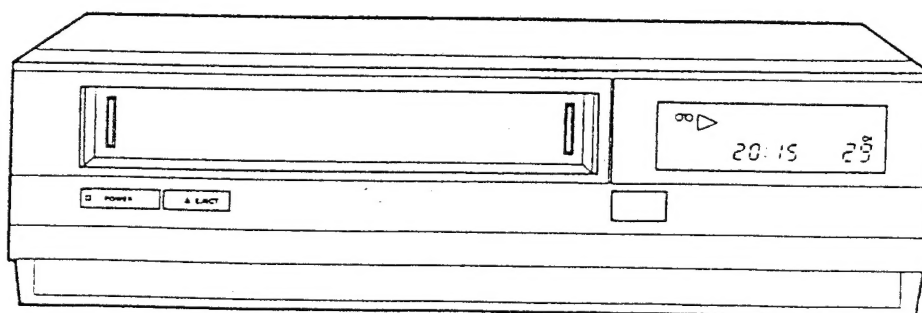
ORIGINAL VERSION

VIDEO CASSETTE RECORDER



HIGH QUALITY PICTURE

OTAKE MODEL VCR-L2



MFR'S VERSION

Specifications are subject to change without notice.

MFR'S VERSION
A

SPECIFICATONS

Power Source :	220V 50Hz
Power Consumption :	Approx. 26W
Operating Temperature :	5°C to 40°C
Television System :	CCIR : 625 lines, 50 fields PAL and OSI color signal
Video Recording System :	2 rotary heads, helical scanning system
	Luminance : FM azimuth recording
	Color signal : Converted subcarrier phase shift recording
Audio Track :	1 track
Tape Format :	Tape width 12.7mm high density tape
Tape Speed :	23.39mm/s
Heads :	Video : 2 rotary heads
	Audio/Control : 1 stationary head
	Erase : 1 full track erase head
Input Level :	Video : VIDEO IN connector 1.0Vp-p, 75 ohm unbalanced
	Audio : LINE IN jack - 8 dB, 50K ohm unbalanced
Output Level :	Video : VIDEO OUT connector 1.0Vp-p, 75 ohm unbalanced
	Audio : LINE OUT jack - 6 dB, 1K ohm unbalanced

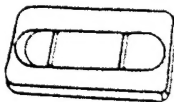
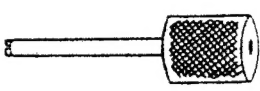

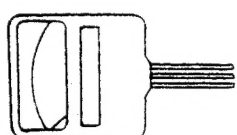
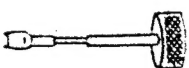
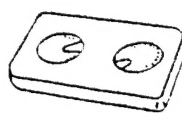
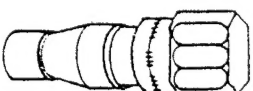
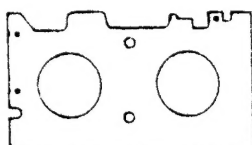
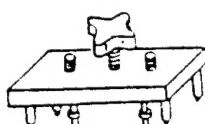
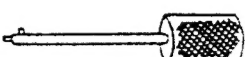
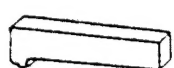

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HQ FEATURE

This video cassette recorder marked "HQ" incorporates VHS high quality picture technology. A built-in detail enhancer is used to boost the recorded signal and provide maximum picture quality in playback. It is compatible with other VHS video cassette recorders.

SERVICING FIXTURES AND TOOLS

JG001 VHS Alignment Tape 	JG005 Post Adjustment Screwdriver 	JG026 Post Adjustment Chip 
Back Tension Meter (Tentelometer, Made in U.S.A.) 	JG021 X-Rut Adjustment Screwdriver 	JG027 Playback Tension Torque Gauge 
JG002D Dial Torque Gauge (300~2400g) JG002E (10~90g) JG002G (100~1200g) 	JG022 Master Plane 	JG031 Upper Drum Fixing Jig 
JG004 Fine Adjustment Screwdriver 	JG024 Reel Table Height Chip 	JG032 Adjustment Screwdriver 

PREVENTIVE CHECKS AND SERVICE INTERVALS

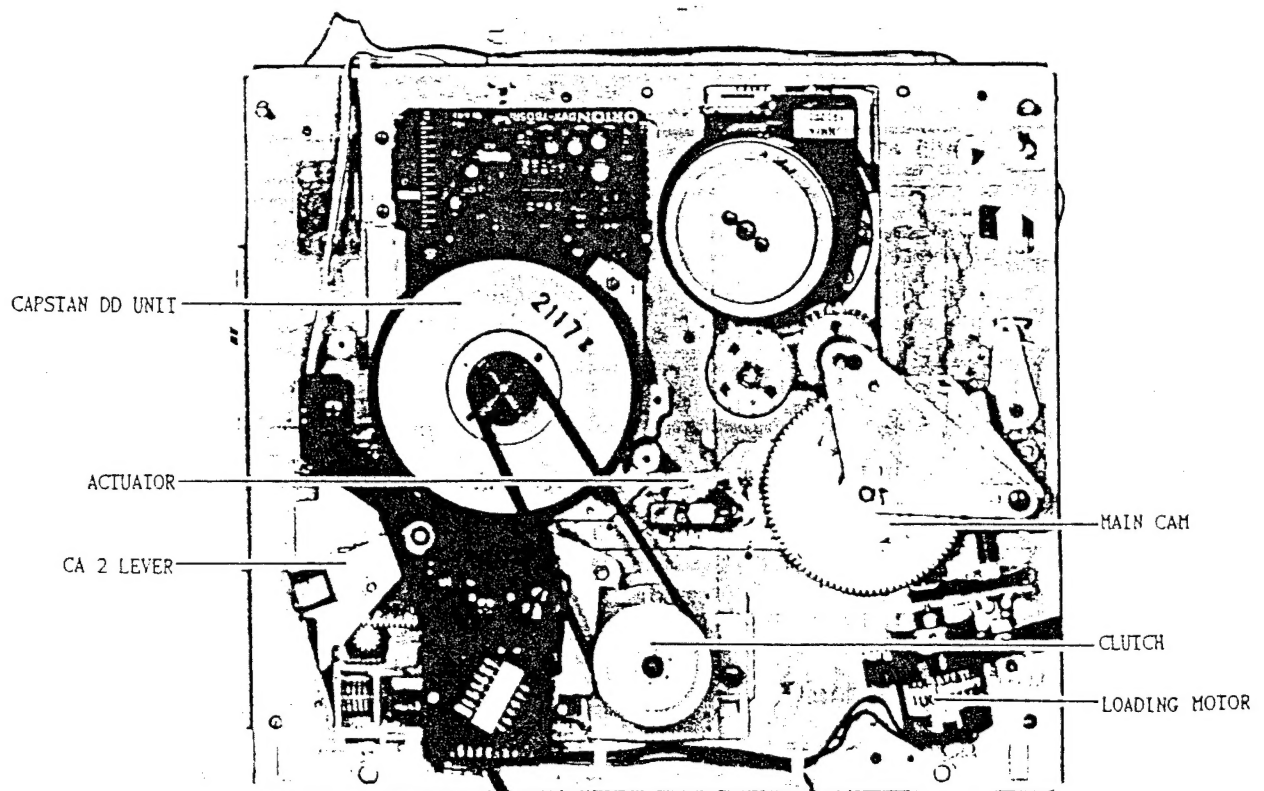
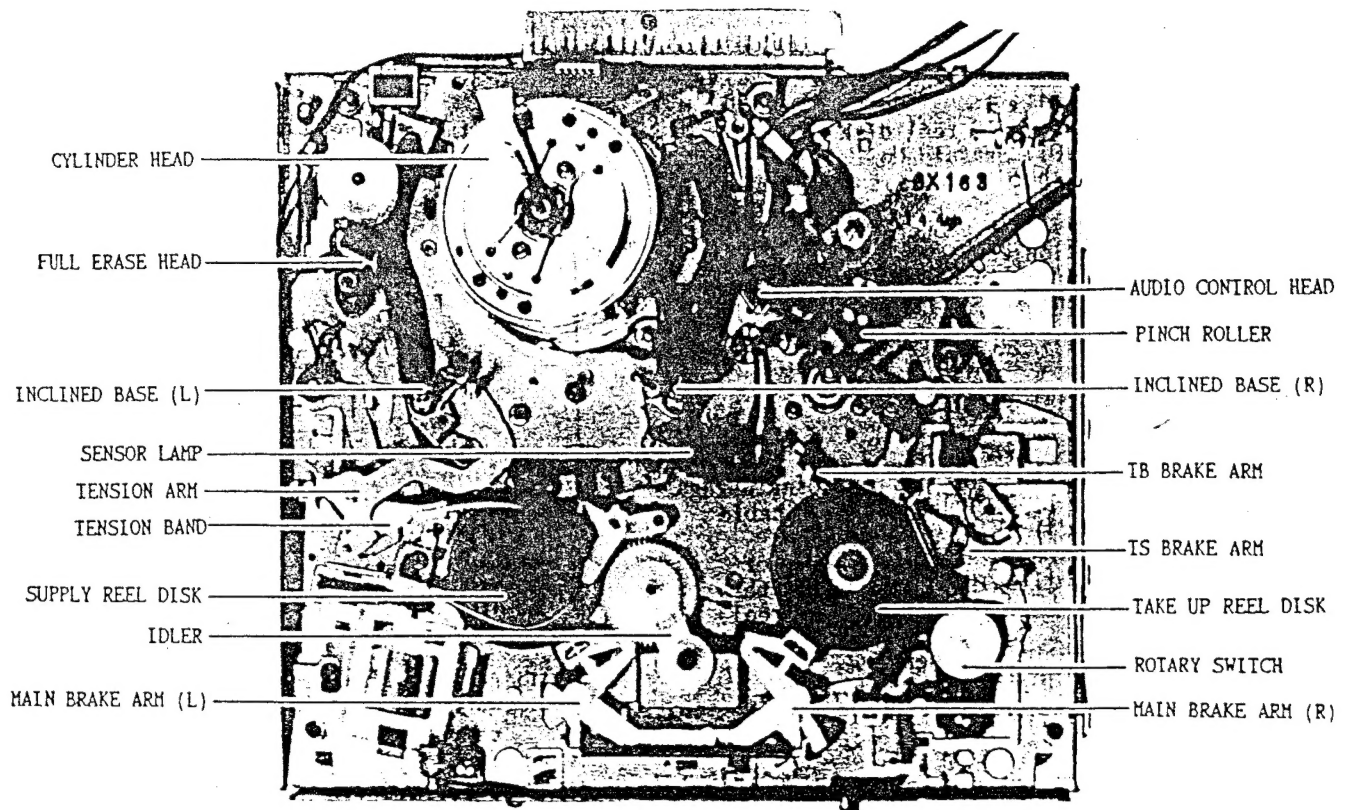
The following standard table depends on environmental condition and usage. And unless the maintenance service is properly carried out, the following intervals may be quite shortened and also a harmful effect may be had on the other parts. Also, long term storage or unuse may cause transformation and aging of rubber parts.

Parts Name	Time hours	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Head, Full Erase	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Clean those parts in contact with the tape.
Head, Audio Control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Belt, Loading		<input type="checkbox"/>		<input type="checkbox"/>			
Belt, Reel		<input type="checkbox"/>		<input type="checkbox"/>			
Pinch Roller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Capstan DD Unit						<input type="checkbox"/>	Clean the rubber, and part which the rubber touches.
Motor, Loading						<input type="checkbox"/>	
Tension Band Assy						<input type="checkbox"/>	
Capstan Shaft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Impedance Roller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tape Running Guide Post	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Need to replace when rolling comes to be abnormal.
Unit, Cylinder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

☐ : Replace ☐ : Clean

Clean the upper drum (especially the video heads) in the direction of drum rotation using a thick, textured cloth with a high-quality methyl alcohol. Avoid wiping vertically as this may cause damage to the video heads.

DECK PARTS LOCATION



INTERCHANGEABILITY METHODS AND ADJUSTMENT

● PRECAUTION

Remove the following items before adjusting the Deck and then start working.

1. Top Cabinet (2 screws)
2. Bottom Plate (5 screws)
3. Front Panel
4. Shield Plate (2 screws)
- * 5. Stage
(Refer to STAGE REMOVAL AND INSTALLATION)

Carefully read each item in ●NOTE sections before starting work.

To operate Deck with stage removed from the unit.

- * Short the Cassette In Switch Terminal with the Deck Chassis.
- * Place an object which weighs between 350g and 500g on the Video Tape to keep it steady while using the Video Cassette Tape. (Do not place an object which weighs over 500g.)

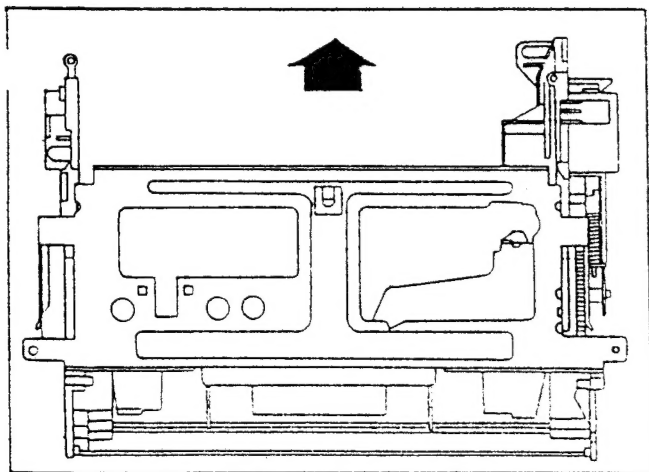
HOW TO REMOVE AND INSTALL STAGE

● REMOVAL

1. Disconnect the 8th pin connector (CP1001), which has been connected to the stage PCB, from the system control PCB.
2. Remove the 2 screws held to inside panel.
3. Remove the 2 screws (Iapping (Bo) 3x10, Red) while stage is locked when power switch is OFF.
4. Push the stage toward arrow mark, and lift up to remove the stage.

● NOTE

1. When you remove and install the stage, be careful not to touch guide pin or cylinder head.
2. Be careful not to break connectors or cut leads.



HOW TO INSTALL

1. Set the stage and hold with the 2 screws (Iapping (Bo) 3x10, Red).
2. Attach the 2 screws to inside panel.
3. Connect the 8th pin connector (CP1001), which comes from stage, to system control PCB.

● NOTE AFTER INSTALLATION

1. Check the following:

- a. Make sure that the Front Loading Operation works well when turning on the power and when inserting a cassette pack into the stage.
- b. If it begins play mode after Play Button is pushed.
- c. If it begins recording mode after Recording Button is pushed.
- d. If it ejects after Eject Button is pushed.

● NOTE

1. Under this operation system, the end sensor and the start sensor are opened. So the auto rewind at the end of the tape will not work.
2. When you want to make tape run without the stage, use an object which weighs approximately 500g.

■ A-1: REPLACEMENT OF REEL DISK AND CONFIRMATION OF ITS HEIGHT

● REMOVAL

(Supply Reel Disk)

1. Remove the SS Brake Spring from the Loading Base.
2. Remove the SS Brake.
3. Remove the tension band.
4. Remove the polyslider washer ①.
5. Separate the mechanical brake from the reel disk.
6. Pull the supply reel disk ③ upward and replace it.

(Take-up Reel Disk)

1. Remove the TB Brake.
2. Remove the polyslider washer ①.
3. Separate the mechanical brake from the reel disk.
4. Pull the take-up reel disk ④ upward and replace it.

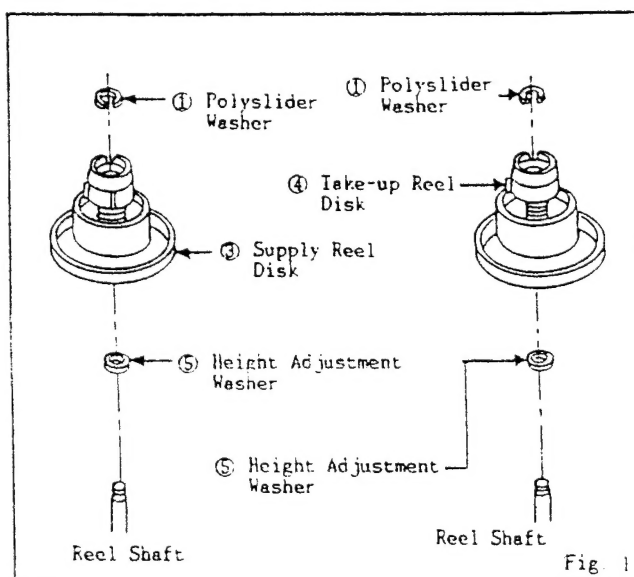


Fig. 1

● INSTALLATION

(Supply Reel Disk)

1. Clean the reel disk shaft and put in height adjusting washer ⑤.
2. Install new supply reel disk.
3. Make height adjustment of the reel disk using the master plane (JG022) and the reel table height chip (JG024).
4. Pull out the new supply reel disk. After oiling (Maruzen Oil Swafuld No.100) on the reel disk shaft, hold the new supply reel disk again.
5. Install the polyslider washer ①.
6. Install the tension band.
7. Install the SS Brake in the chassis.
8. Install the Spring in the Loading Base.

(Take-up Reel Disk)

1. Clean the reel disk shaft and put in height adjusting washer ⑤.
2. Install new take-up reel disk.
3. Make height adjustment of the reel disk using the master plane (JG022) and the reel table height chip (JG024).
4. Pull out the new reel take-up disk. After oiling (Maruzen Oil Swafuld No.100) on the reel disk shaft, hold the new take-up reel support again.
5. Install the polyslider washer ①.
6. Install the take-up side (IS) Brake.

● NOTE

1. Make height adjustment of the reel disk after replacement.
2. Be careful not to deform the tension band at the time of removal and installation.
3. Be careful not to deform the IS Brake.
4. Be careful not to scratch the reel disk shaft by the polyslider washer or tool at the time of removal and installation.
5. After installation adjust the tension post position and the tape tension when playing back in accordance with ■A-7.
6. Refer to ■A-2 for reel disk height adjustment.

A-2: HEIGHT CONFIRMATION AND ADJUSTMENT

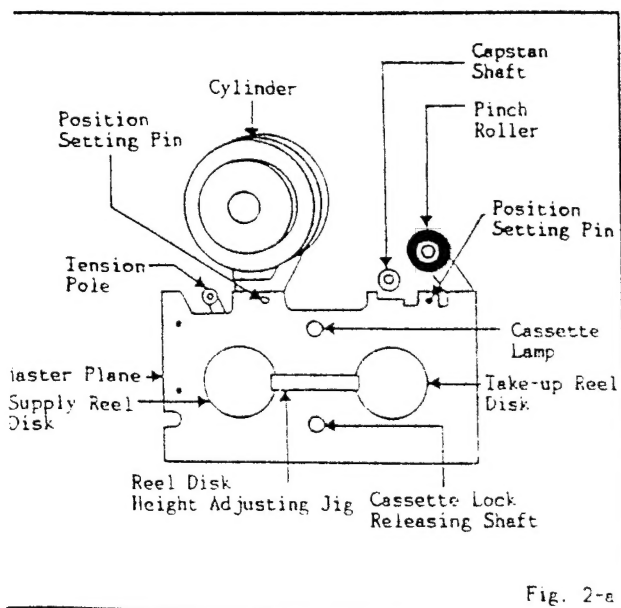


Fig. 2-a

ADJUSTMENT

1. Set the master plane (JG022) at mechanism framework, taking care not to scratch the drum, as shown in Fig. 2-a.

2. Confirm that the master plane (JG022) sits between A and B, as shown in Fig. 2-b, using the reel table height chip (JG024). In case it is beyond the range of set-up value, adjust it by the height adjusting washer, making up-down play within 0.1~0.5mm.

● NOTE

1. Use same thickness adjustment washer (REF#521) as found in unit.

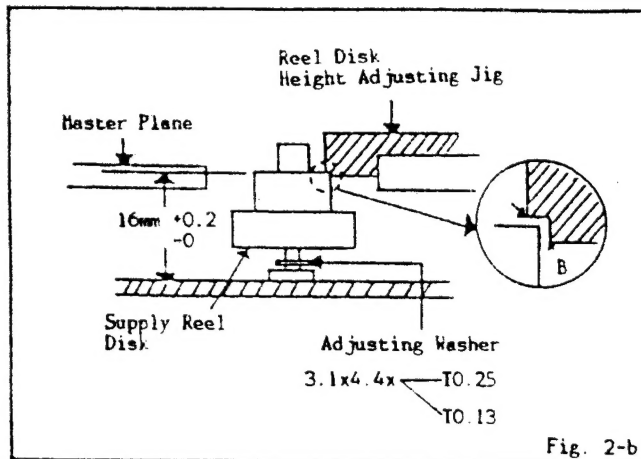


Fig. 2-b

NOTE: Refer to the table below for possible cause of problems when confirmation cannot be made for the indicated items.

CONFIRMATION ITEM	CHECK POINT (REPLACEMENT)
A-3 A-4 A-5 A-7	Capstan belt may be stretched clutch may be worn out (if so, change reel disk) Idler Ass'y may be worn out.
A-6 A-8	Tension band may be worn out.
A-15	Main brake belt may be worn out.

LIST OF CONFIRMATION ITEM:

- A-3 Fast forward and its take-up torque confirmation
- A-4 Rewind and its take-up torque confirmation
- A-5 Record take-up torque confirmation
- A-6 Confirmation of fast forward back tension
- A-7 Confirmation of rewind
- A-8 Confirmation of search cue back tension
- A-15 Confirmation of reel brake torque

■ A-3: CONFIRMATION OF FAST FORWARD AND ITS TAKE-UP TORQUE

● CONFIRMATION

1. Set torque gauge (JG002D) on take-up reel disk, and place unit in fast forward mode.
2. Confirm that torque is more than 800g.cm.

● NOTE

1. Hold the torque gauge (JG002D) in place when you push Fast Forward Button and reel disk begins to turn, after setting torque gauge (JG002D) on the reel disk.
2. Carry out this confirmation and adjustment without using a video cassette tape.

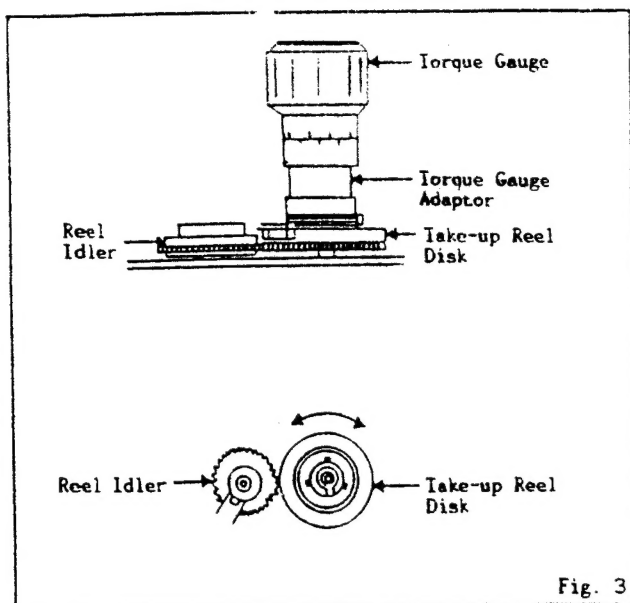


Fig. 3

■ A-4: CONFIRMATION OF REWIND AND ITS TAKE-UP TORQUE

● CONFIRMATION

1. Set the torque gauge (JG002D) on the supply reel disk, and place the unit in rewinding mode.
2. Confirm that torque is more than 800g.cm.

● NOTE

1. Hold the torque gauge (JG002D) in place when you push the Rewind Button, and the reel disk begins to turn, after setting the torque gauge (JG002D) on the reel disk.
2. Carry out this confirmation and adjustment without using a video cassette tape.

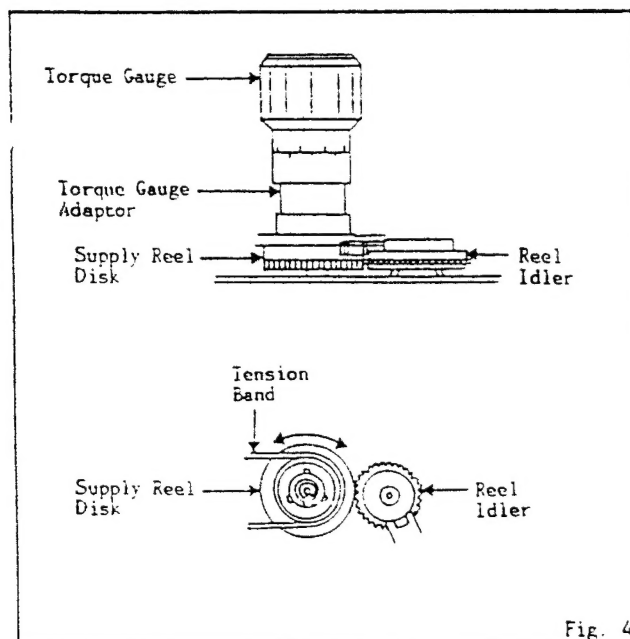


Fig. 4

■ A-5: CONFIRMATION OF RECORDING TAKE-UP TORQUE

● CONFIRMATION

1. Set torque gauge (JG027) on the rewind reel disk, then check REC mode.
2. Make sure that the torque covers the range, 100~230g.cm.

■ A-6: CONFIRMATION OF FAST FORWARD BACK TENSION

● CONFIRMATION

1. Set the unit in the fast forward mode by pushing Fast Forward Button.
2. Put the torque gauge (JG002E) on the supply reel disk and make slow right turn (one turn in a few seconds). And confirm the torque is within set-up value (15~35g.cm).

● NOTE

1. Put the torque gauge (JG002E) on the reel disk steadily and measure.

■ A-7: CONFIRMATION OF REWIND

● CONFIRMATION

1. Set the unit in the rewind mode by pushing Rewind Button.
2. Put the torque gauge (JG002E) on the take-up reel disk and make slow left turn (one turn in a few seconds) and confirm the torque is within set value (30~60g.cm).

● NOTE

Put the torque gauge (JG002E) on the reel disk steadily and measure.

■ A-8: CONFIRMATION OF SEARCH CUE BACK TENSION

● CONFIRMATION

1. Set the unit in the play mode by pushing Play Button.
2. Push Search Cue Button and the unit will be in the search cue mode. Confirm SS brake is working on the supply reel disk.
3. Put the torque gauge (JG002E) on the supply reel disk and make slow right turn (one turn in a few seconds). Measure torque of this and confirm it satisfies set-up point (above 90g.cm).

● NOTE

1. After positioning the tension arm, conduct confirmation and adjustment of visual search cue back tension.
2. Put the torque gauge (JG002E) on the reel disk steadily and measure. In case the torque gauge is playing, correct measurement will not be done.

■ A-9, 10, 11: NOT REQUIRED FOR THIS MODEL

■ A-12 CONFIRMATION AND ADJUSTMENT OF TENSION POLE POSITION

● CONFIRMATION

1. Load the E-180 tape, and press the PLAY button to set the playback mode.
2. As soon as guide rollers, L, R begin to draw tape from cassette, tension pole shall move to the left, thus loading will start. Confirm tension pole position at this stage.
3. When the tape (E-180) is near the beginning, confirm by eye that the center of tension pole is positioned 4.5~6.5mm to the left from center of PI post.
4. Confirm that video tape is not curling at flange of PI post or is not running on flanges.

● POSITIONING

1. In case tension pole is positioned to the left of center of PI Post by less than 4.5mm, move tension band adjustment angle ① to direction of arrow B (Fig. 12-a), then screw ② shall be tightened.
2. In case tension pole is positioned on the left of center of PI post by more than 6.5mm, move tension band adjustment angle ① to direction of arrow A (Fig. 12-b), then screw ② shall be tightened.

● NOTE

1. After completion of positioning, do not forget to fix the position with paint.
2. Do not overtighten screw, otherwise threads may be damaged.

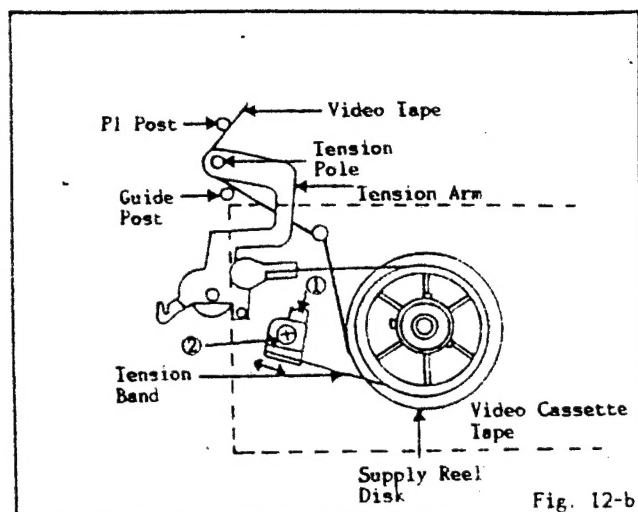


Fig. 12-b

■ A-13: NOT REQUIRED FOR THIS MODEL

■ A-14: CONFIRMATION AND ADJUSTMENT OF BACK TENSION OF RECORDING AND PLAYBACK

● CONFIRMATION

- When you use back tension measuring cassette.
1. Set the measuring cassette tape.
 2. Set the unit in recording mode. At this time, confirm, by pointer of the measuring cassette tape, that back tension is within set-up points (20~50g.cm).
 3. Confirm video tape is tightly running on fixed guide.
 4. At beginning and ending of tape, confirm there is no sag or damage on edge of tape.

○ When you use tentelometer.

1. Set E-180 cassette tape to the beginning.
2. Set the unit in recording mode.
3. Pull Impedance roller toward arrow A as in Fig. 14-a and set tentelometer as in Fig. 14-a, 14-b confirming tape tension is within set-up points (23~30g).
4. Confirm video tape is running tight on PI post.
5. Confirm there is no sag or damage on edge of tape both in beginning and ending of tape.

● ADJUSTMENT

1. In case tape tension is weaker than 23g, adjust tension plate on arrow A side of Fig. 14-c and re-confirm the tension.
2. In case tape tension is stronger than 30g, adjust tension plate on arrow B side of Fig. 14-c and re-confirm the tension. (Use adjusting screwdriver, JG032)

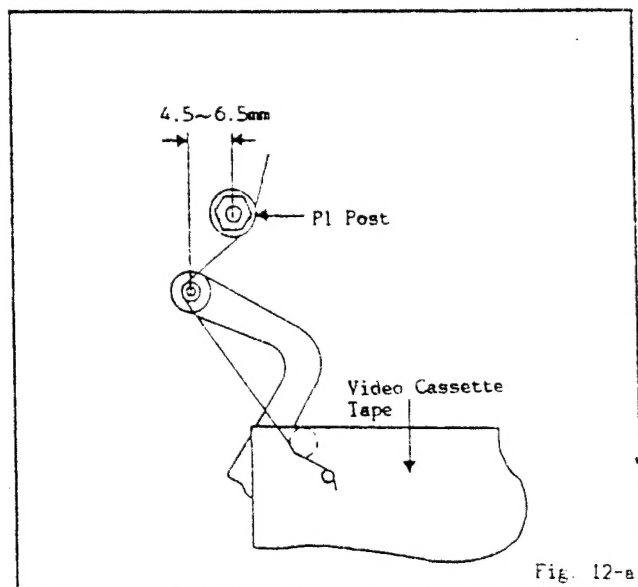
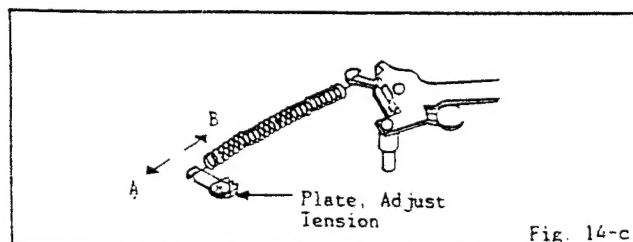
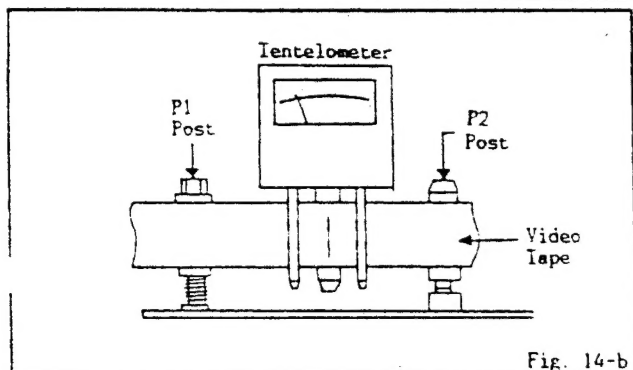
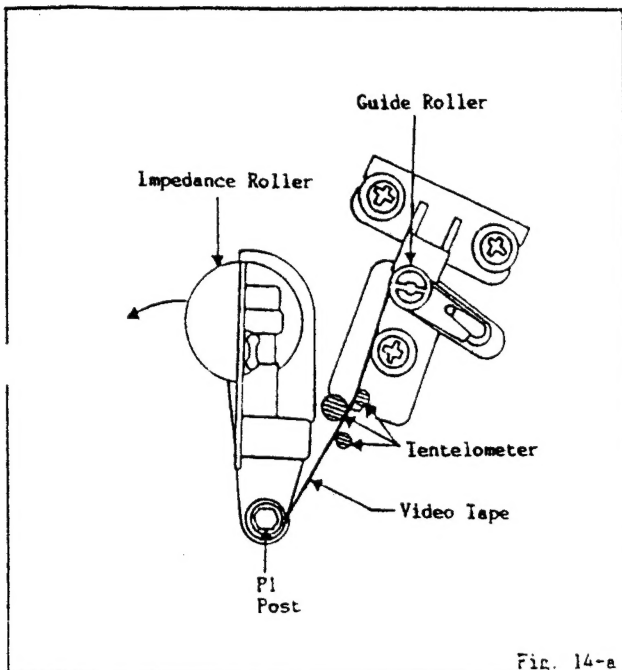


Fig. 12-a

● NOTE

1. The tentelometer should not touch F/E Head, drum or other component where tape may go over it.
2. When you use the back tension measuring cassette, it is recommended to also use tentelometer for proofreading.
3. Use lock paint after adjustment.
4. Do not overtighten screw, as threads may be damaged.

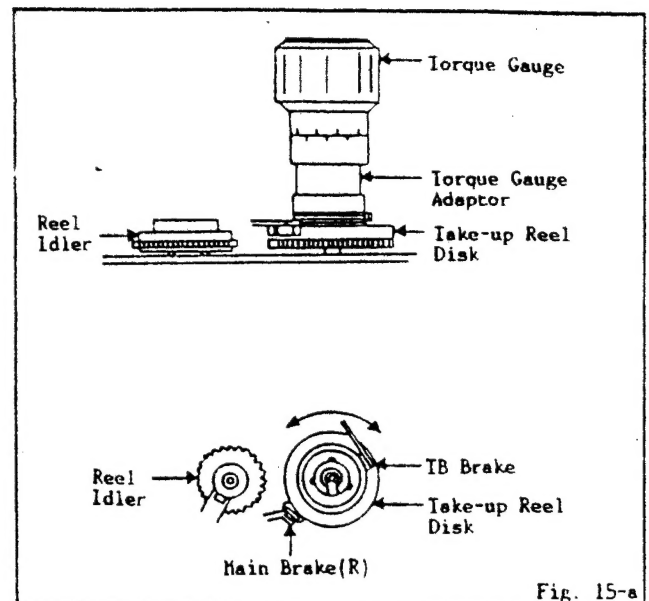


■ A-15: CONFIRMATION OF REEL BRAKE TORQUE

■ A-15-1: Confirmation of take-up reel brake

● CONFIRMATION

1. Set the stop mode.
2. Set the torque gauge (JG0026) to the take-up reel and turn it counter-clockwise. Confirm that the brake torque is more than 250g.cm. Refer to Fig. 15-a.



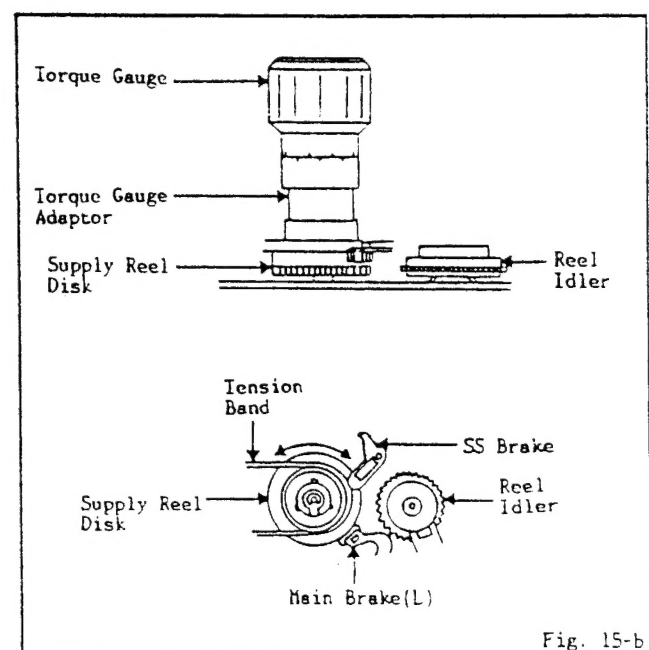
■ A-15-2: Confirmation of supply reel brake

● CONFIRMATION

1. Set the stop mode.
2. Set the torque gauge (JG0026) to the supply reel and turn it clockwise. Confirm that the brake torque is more than 250g.cm. Refer to Fig. 15-b.

● NOTE

1. Separate the idler from the reel and confirm the brake torque.



■ A-16: CONFIRMATION AND ADJUSTMENT FOR THE HEIGHT OF P1 POST, P4 POST, LIMITER POST

● CONFIRMATION

1. Confirm that when tape is running there is no crease or bend on the tape edge at the places shown in Fig. 16-a.

■ A-16-1: Confirmation and adjustment for the height of P1 post

● ADJUSTMENT

1. Set the master plane (JG022) to the Deck.
2. Put the Post Adjustment Tip (JG026) on the master plane (JG022), adjust the height by sliding the 'A' part of Post Adjustment Tip (JG026) to the "a" direction of the master plane (JG022). Refer to Fig. 16-b, c.

■ A-16-2: Confirmation and adjustment for the height of P4 post.

● ADJUSTMENT

1. Set the master plane (JG022) to the Deck.
2. Put the Post Adjustment Tip (JG026) on the master plane (JG022), adjust the height by sliding the 'A' part of Post Adjustment Tip (JG026) to the "b" direction of the master plane (JG022). Refer to Fig. 16-b, c.

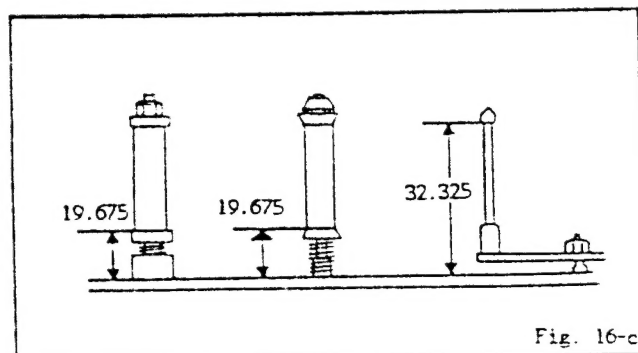
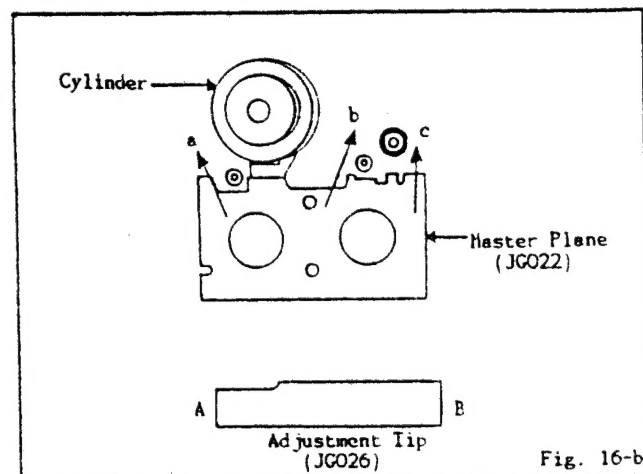
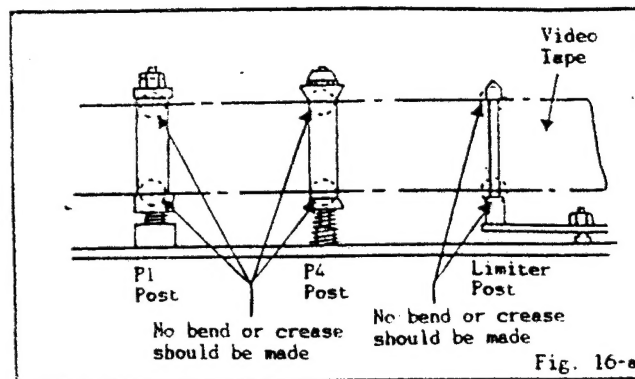
■ A-16-3: Confirmation and adjustment for the height of limiter post

● ADJUSTMENT

1. Set the master plane (JG022) to the Deck.
2. Put the Post Adjustment Tip (JG026) on the master plane (JG022), adjust the height by sliding the 'A' part of Post Adjustment Tip (JG026) to the "c" direction of the master plane (JG022). Refer to Fig. 16-b, c.

● NOTE

1. The following adjustment must be carried out only when the height is not correct.
2. After adjustment, check it with a video tape running condition.
3. After completion of adjustment, carry out tape running adjustment. After adjusting the guide roller (L, R), check as shown in Fig. 16-a.
4. Do not move the nut after completion of adjustment.
5. After completing of adjustment, always fix P1 post and the guide roller with a screw lock.



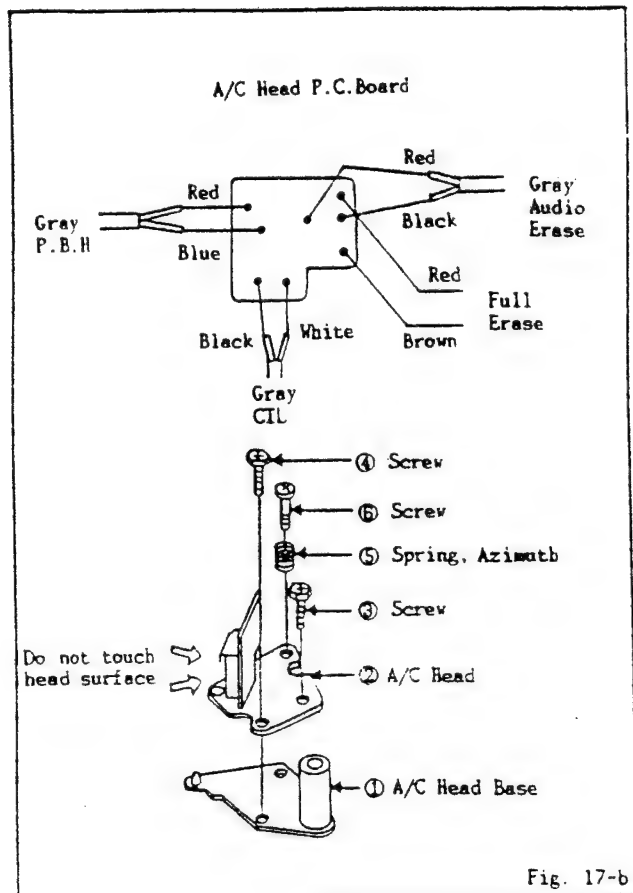
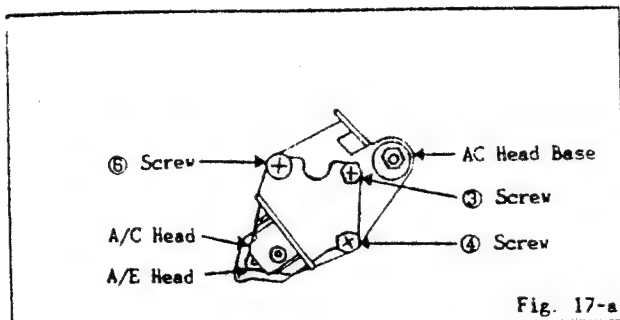
■ A-17: REPLACEMENT OF A/C HEAD

● REPLACEMENT

1. Remove solder from lead wires placed on A/C Head P.C.Board, and take lead wires away from P.C.Board.
2. Loosen set screw ③ using.
3. Remove screw ④ using plus(+) driver.
4. Remove A/C Head screw ⑥ using plus(+) driver. Carefully do this, because there is a spring between plate and A/C Head screw.

● NOTE

1. After completion of replacement, do not fail to carry out tape running adjustment. Do not touch head by any means when replacing A/C Head.



■ A-18: CONFIRMATION AND ADJUSTMENT OF A/C HEAD HEIGHT AND TILT

● CONFIRMATION

1. Set the unit in play mode using a E-180 tape.
2. Confirm that tape is not curling on flange of guide post.
3. Confirm that height and tilt of A/C Head against tape are as per Fig. 18.

● ADJUSTMENT

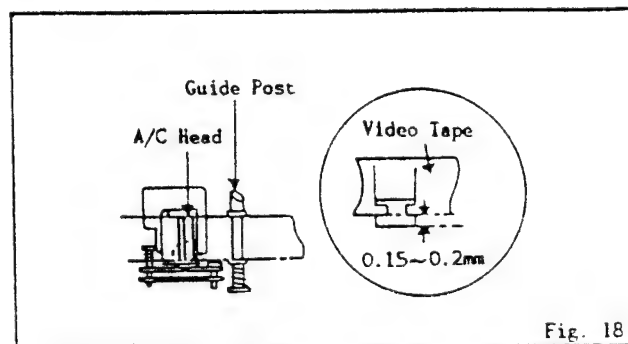
In case tape is running abnormally, make the following adjustments (Fig. 17-a and 18).

1. Check tape running condition with the unit in play mode using the E-180 tape.
2. Confirm tape runs smoothly without any crease or bend between guide post and guide roller R.
3. It is absolutely impossible to get satisfactory sound if tape is distorted between A/C Head and guide post. So confirm there is no crease on the tape.

4. In case tape is not in good condition, adjust it by turning screw ③ slowly.
NOTE: Do not move guide post.
5. Height of A/C Head against tape should be as per Fig. 18.

If a tape runs smoothly around A/C Head and rough adjustment of height is done, carry out the height and azimuth adjustment of A/C Head using linear tape (JG001).

1. Play back audio tone 6KHz (picture is B/W Pattern) linear tape (JG001) and observe the waveform at Audio output terminal with oscilloscope.
2. Turn SET SCREW ④ slowly until maximum level is achieved. When the level becomes maximum, SET SCREWS where level variation is the smallest. (Fig. 17-a)
3. Re-check the tape running adjustment. (■ A-19)



■ A-19: ADJUSTMENT OF TAPE RUNNING

● ADJUSTMENT

1. Carry out the reel disk height adjustment using master plane (JG022) and reel table height chip (JG024).
2. Carry out the height confirmation and adjustment of P1 post and the guide post using fixed jig (JG029B) in accordance with paragraph ■ A-16.
3. In accordance with ■ A-12 and ■ A-13, carry out the positioning and confirm that the tension pole is with the tension pole positioning jig (JG029B).
4. Play back the rough adjustment tape and make rough adjustment of guide roller height with the tool (JG021) according to ■ A-21 and then, match lower edge of tape to drum lead and make sure that the video tape does not curl on flange of the guide post.
5. In accordance with ■ A-21, play the linear tape and adjust the guide roller height so that the envelope becomes flat and that flatness will not be affected even when the tracking control knob is turned.
6. In accordance with ■ A-18, adjust A/C Head height, tilt and azimuth.
7. Position the tracking control knob at preset and turn adjusting nut X a little as in Fig. 17-a so that envelope becomes maximum. Adjust position of A/C Head.
8. To confirm the flatness of envelope and voice recording, use the output from an appropriate test signal.
9. After completion of adjustment, fix each adjustment screw and nut etc.

■ A-20: REPLACEMENT OF UPPER DRUM

● REPLACEMENT

1. Remove the 2 screws (Bind M3x6 ⑦, ⑧) held the Head Amp, then pull out the Head Amp from the cylinder.
2. Remove the screw ⑥ which held the EARTH BRUSH ⑤.
3. Disconnect the lead wires ① (two, yellow).
4. Disconnect the lead wire ② (one, red).
5. Disconnect the lead wire ③ (one, brown).
6. Remove the two holding screws with the flat washers ④ using plus(+) driver.
7. Pull out upper drum in such a way that it will not incline upward and carefully replace in order not to scratch disk.

● INSTALLATION

1. Set up a new drum as per Fig. 20 and correctly place each lead wire.
2. Set upper drum by two installing screws ④.
3. Solder lead wires ①, ② and ③ to their respective positions.
4. Install the EARTH BRUSH ⑤ by the screw ⑥.
5. Set the Head Amp with the 2 screws ⑦, ⑧ again.

● NOTE

1. Fitting clearance between the disk outer diameter and the drum inner diameter is made in micron order. Scratches and dust can make them hard to fit or to separate them and can adversely affect fitness of the drum and disk. Pay attention.
2. Do not touch the head on drum surface directly.
3. Do not apply excessive pressure to screwdriver.
4. Unless you have the tool (JG031), use gloves.
5. Connect to yellow, brown lead (CH-1) and red, yellow lead (CH-2).
6. Before installing, confirm that there is no scratch or dust on the disk front and surface.
7. Before installing, confirm that there are no scratches on the disk and upper drum assembly.
8. When setting, take care not to let any dust or dirt go into the clearance between disk and upper drum.
9. Turn holding screws slowly and carefully.
10. After completion of replacement, do not forget to carry out tape running adjustment, and do the following electrical adjustment and confirmations.

- a. ■ E-4: P.G. Shifter Adjustment
- b. ■ E-6: Tracking Fix Adjustment
- c. ■ E-18: Playback Luminance Level Adjustment
- d. ■ A-21: Guide Roller Adjustment

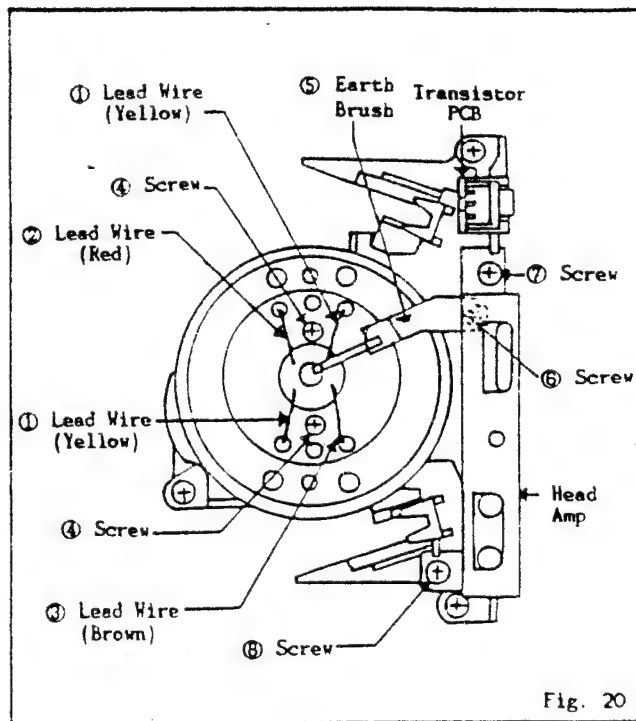


Fig. 20

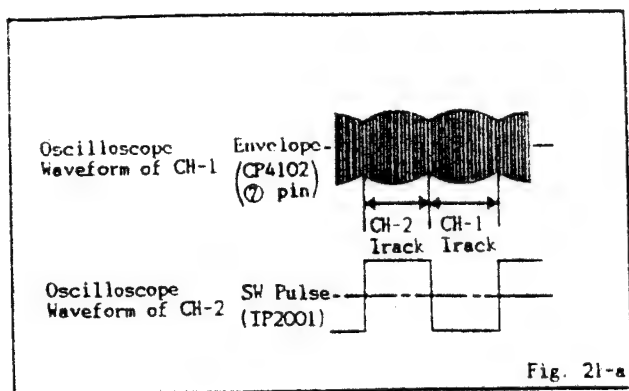
■ A-21: ADJUSTMENT OF GUIDE ROLLER

● ADJUSTMENT

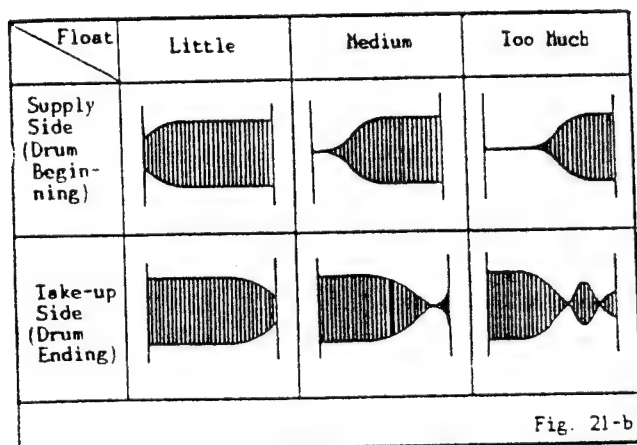
1. Insert a linear tape into stage.
2. Switch on main power and then connect monitor output cord and video input cord to proper positions.
3. Connect CH-1 and CH-2 of oscilloscope to envelope output and to the test point of switching pulse, respectively.
4. Carry out this adjustment in playback mode.
5. Trigger with SW pulse and observe the envelope. (Fig. 21-a)
6. Observe the envelope, adjust the guide roller height and let tape run on drum head.
If a video tape is running above or below helical lead position, waveform shall appear as in Fig. 21-b and 21-c.
7. Adjust the guide roller height while observing the envelope, and make the envelope flat. Adjust the envelope so that the flatness will not be affected even when the tracking control knob is turned.
8. When the tracking control knob is turned, adjust the envelope so that its A:B ratio is better than 10:7 at where the waveform starts to reduce at 'A'. (Fig. 21-d)
9. Make adjustment of ■ E-4 P.G. shifter point as per play SW point of electrical adjustment.
10. Record the color bar and playback, to confirm the envelope is flat.
11. After that, carry out confirmation of the envelope.

● NOTE

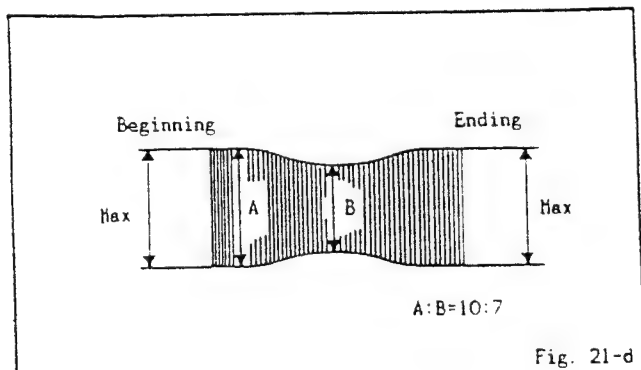
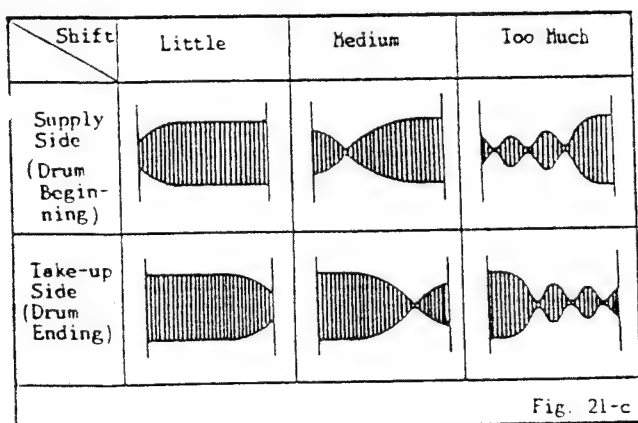
1. In case the guide roller has been adjusted, Re-adjust ● ADJUSTMENT in ■ A-18 again.



a: Envelope waveform will appear like Fig. 21-b when a video tape is above the helical lead position.



b: Envelope waveform will appear like Fig. 21-c when a video tape is lower than helical lead position.



■ A-22~25: NOT REQUIRED FOR THIS MODEL

■ A-26: REPLACEMENT OF CYLINDER UNIT

● REMOVAL

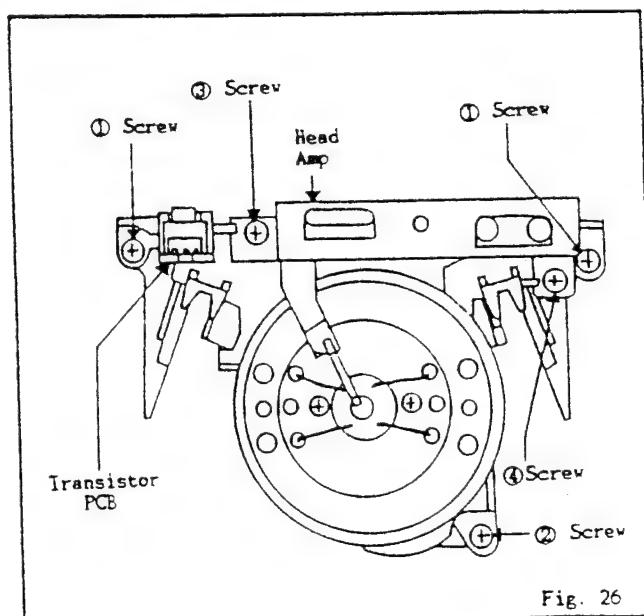
1. Remove the 2 screws (Bind M3x6 ③, ④) held the Head Amp, then pull out the Head Amp from the cylinder.
2. Remove the transistor PCB according to item ■ A-39.
3. Remove the video head shield plate in the video base plate to disconnect the video head lead connector.
4. Disconnect the connector on the cylinder base plate.
5. Disconnect the heater lead connector on the cylinder from the relay base plate.
6. Remove the cylinder unit by taking out the screws ① and ②. (Fig. 26)

● INSTALLATION

1. Install a new cylinder unit in reverse steps of REMOVAL.
2. Install the transistor PCB according to item ■ A-39.
3. Install the Head Amp with the 2 screws ③, ④ again.

● NOTE

1. Do not touch the surface of the cylinder head.
2. Make sure of ■ A-20.



■ A-27: REPLACEMENT OF TENSION BAND ASS'Y

● REMOVAL

1. Remove the screw ① held to the tension band.
2. Release the SS brake from the tension band to remove it from the Supply Reel Disk. (Fig. 27)
3. Remove the tension band from the tension arm.

● INSTALLATION

1. Install a new cylinder unit in reverse steps of REMOVAL.

● NOTE

1. The tension band should not be twisted while installing it.
2. Adjust the placement of the tension post according to item ■ A-12.
3. After adjustment of the above 2 items, adjust it according to item ■ A-14.

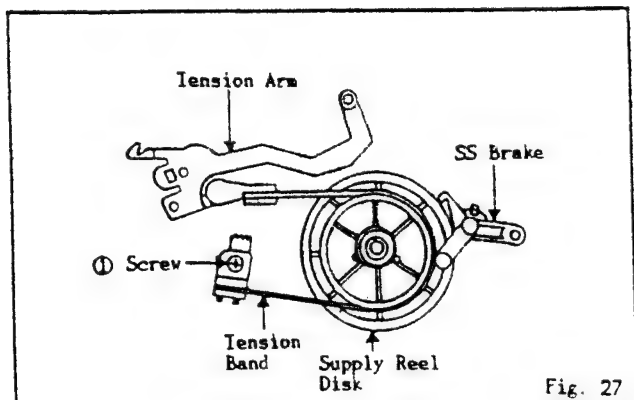


Fig. 27

■ A-28~33: NOT REQUIRED FOR THIS MODEL

■ A-34: REPLACEMENT OF LOADING BELT

● REMOVAL

1. Remove the screw ① held to the FS Gear Plate.
2. Remove the FS Gear Plate, the Polyslider Washer ② and the Fan Shaped Gear. (Fig. 34-a)
3. Remove the screw ③ held to the Loading Motor Band to take it off. (Fig. 34-b)
4. Remove the 2 pieces of stoppers ④, then pull the hook ⑤ in the direction of the arrow to remove the Loading Motor. (Fig. 34-b)
5. Remove the Loading Belt from the Loading Motor.
6. Move the Tension Lever 1 to the dotted line. (Fig. 34-a)
7. Remove the Main Cam.
8. Remove the Worm Ass'y and replace Loading Belt with new one.

● INSTALLATION

1. Hang a new Loading Belt on the pulley of the Worm Ass'y, then hang it on the pulley of the Loading Motor.
2. First, attach the Loading Motor, next fix the Worm Ass'y.
3. Install the Main Cam.
4. Install the Tension Lever 1.
5. Install the Fan Shaped Gear.
6. Install the FS Gear Plate, then hold the screw ①.
7. Install the Loading Motor Band with the screw ②.

● NOTE

1. Clean the pulley when replacing Loading Belt.
2. Exchange it in stop mode.
3. Avoid sticking grease to the Loading Belt.
4. Do not mistake the point (A, D, E) of the Main Cam, the Tension Lever 1 and the Fan Shaped Gear. (Fig. 34-a, b, c)
5. Make sure that A point is within B range in holding of the Main Cam. (Fig. 34-c)
6. Make sure that D part is within C part in holding of the Tension Lever 1. (Fig. 34-a, c)
7. Make sure that E part is within C part in holding of the Fan Shaped Gear. (Fig. 34-a, c)

● CHECK AFTER INSTALLATION

1. Check if strange sound is made in play mode.
2. Check if P2 post and P3 post are fitted to the post stopper.
3. Check if P2 post and P3 post are completely returned in stop mode.

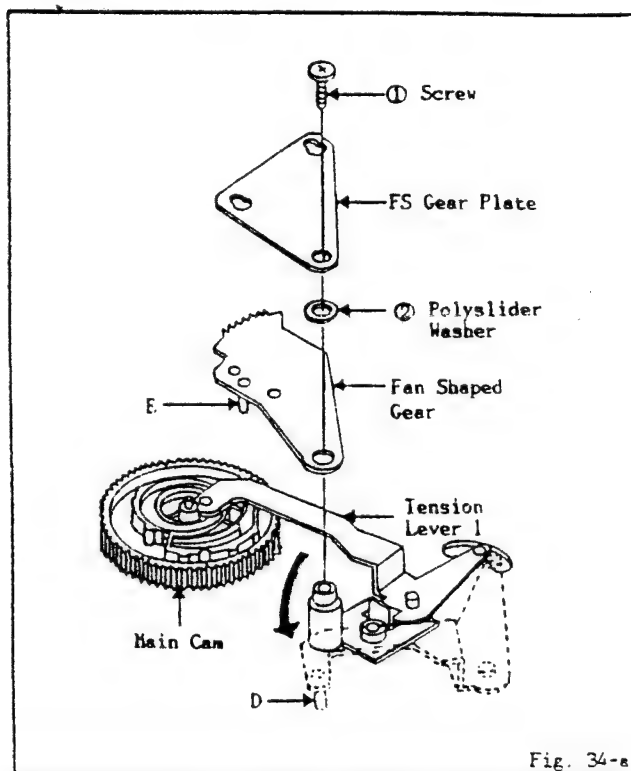


Fig. 34-a

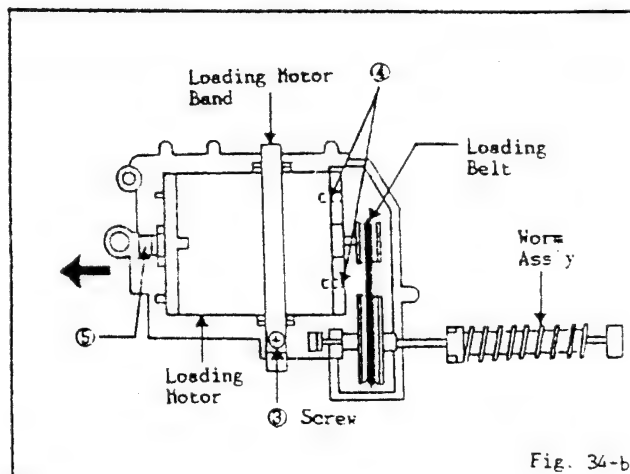


Fig. 34-b

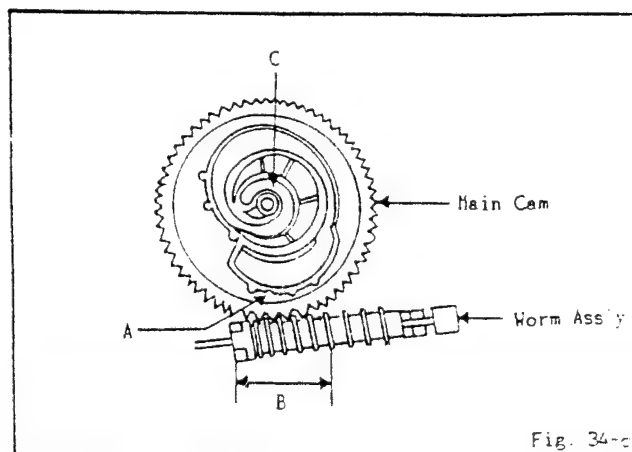


Fig. 34-c

■ A-35: NOT REQUIRED FOR THIS MODEL

■ A-36: REPLACEMENT OF PINCH ROLLER

● REMOVAL

1. Remove the screw ①. (Fig. 36)
2. Remove the Pinch Roller.

● INSTALLATION

1. Install a new Pinch Roller in reverse order of REMOVAL.

● NOTE

1. Be careful of bending the Pinch Roller Arm in removal and installation.
2. Do not touch around the Pinch Roller.

● CHECK AFTER INSTALLATION

1. Check if the tape is running normally in PLAY mode.

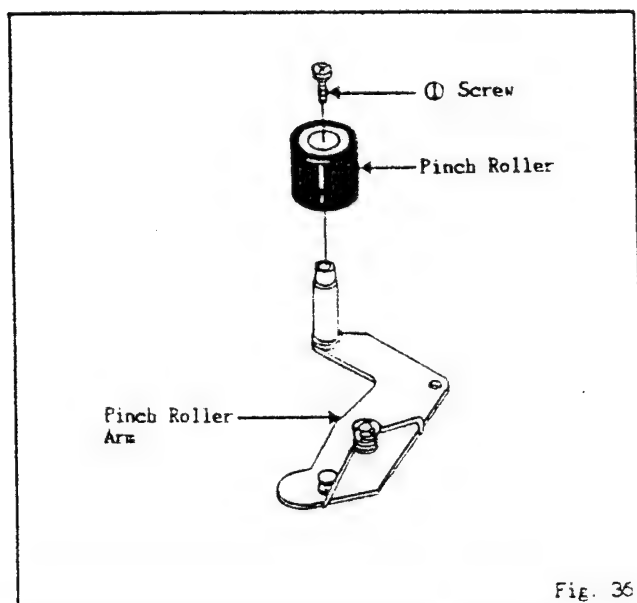


Fig. 36

■ A-37: REPLACEMENT OF DD UNIT

● REMOVAL

1. Remove the Deck unit from the Inside Cabinet.
2. Remove the 3 screws ① (SEMS A 2.6x6) held to DD unit on front of the Deck. (Fig. 37)
3. Turn the Deck over, then remove the Reel Belt from the clutch pulley.
4. Remove the screw ⑤ (IAP TITE(S) BIND 3x6) held to the DD unit PCB. (Fig. 35)
5. Remove the DD unit slowly from rear side of the Deck.

● INSTALLATION

1. Return the Limiter Post to the dotted line, then fit new DD unit to the chassis without touching center of the shaft of the DD unit to the chassis. And return the Limiter Post to where it was. (Fig. 37)
2. Install the screw ⑤ (IAP TITE(S) BIND 3x6) held to the DD unit PCB. (Fig. 35)
3. Install the clutch pulley without twisting the Reel Belt.

● NOTE

1. Do not bend the Limiter Post.
2. Use the specified screw held to the DD unit.
3. Tighten the screws completely.

● CHECK AFTER INSTALLATION

1. Check if tape running is normal in PLAY mode.
2. Check if FF/REW mode works normally.

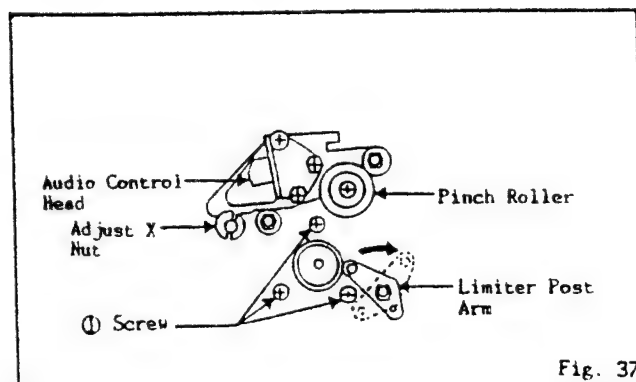


Fig. 37

■ A-38: REPLACEMENT OF LOADING MOTOR

● REMOVAL

1. Remove the screw ③ held to the Loading Motor Band.
2. Remove the 2 stoppers ④, then pull the book ⑤ in the direction of the arrow to take off the Loading Motor. (Fig. 34-b)
3. Remove the Loading Belt from the Loading Motor.

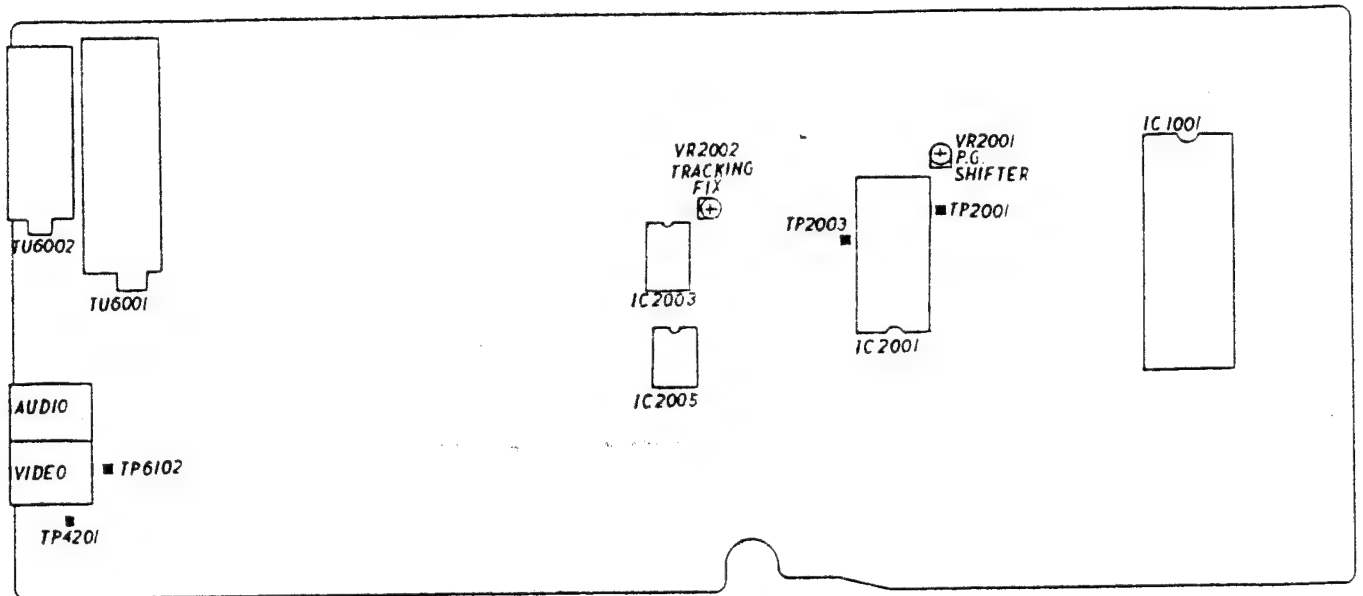
● INSTALLATION

1. Install new Loading Motor in reverse steps of REMOVAL.

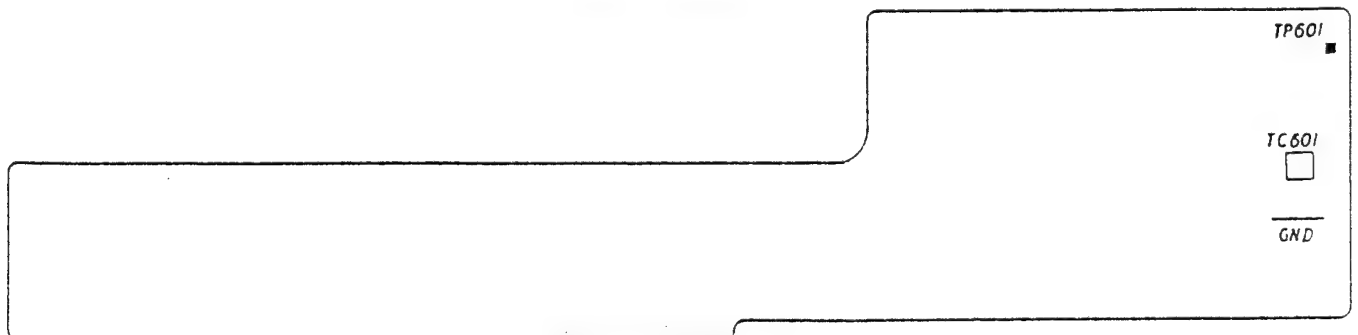
● NOTE

1. Make sure to wire the lead.

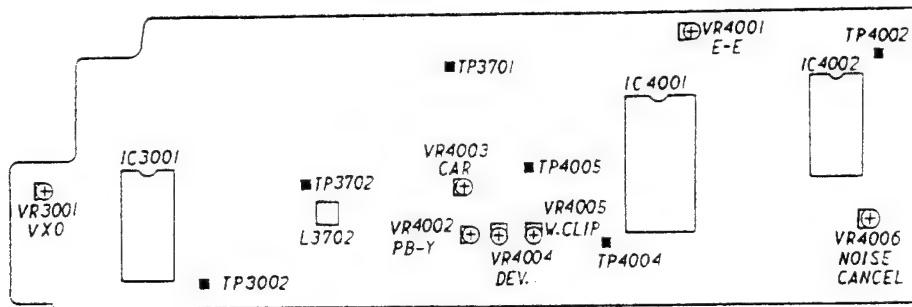
MAJOR COMPONENTS LOCATION GUIDE



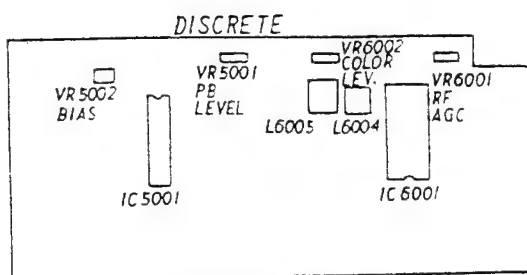
MAIN P.C. BOARD



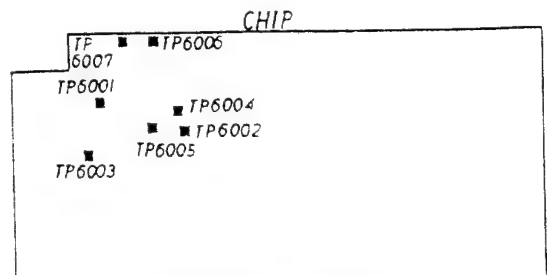
OPERATION P.C. BOARD



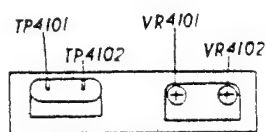
Y/C P.C. BOARD



AUDIO/VIF P.C. BOARD



AUDIO/VIF P.C. BOARD



HEAD AMP

■ A-39: REPLACEMENT OF TRANSISTOR PCB AND TRANSISTOR SPRING

● REMOVAL

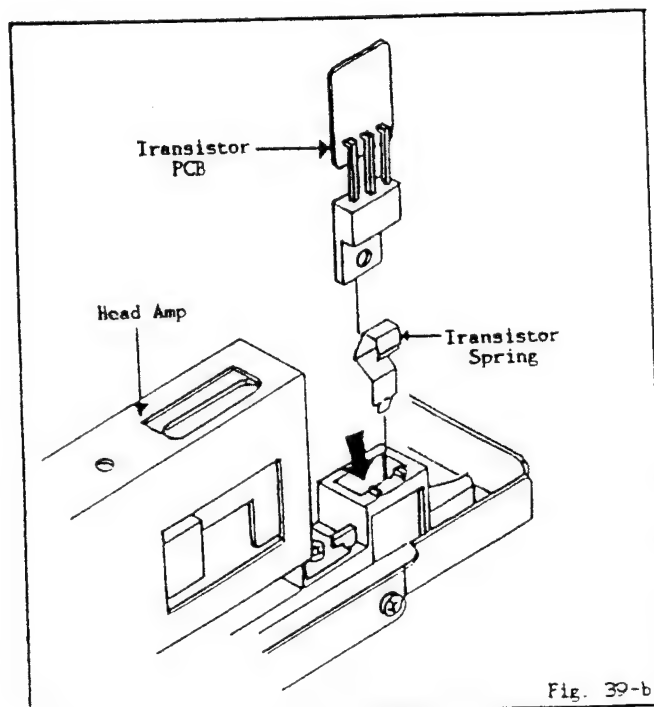
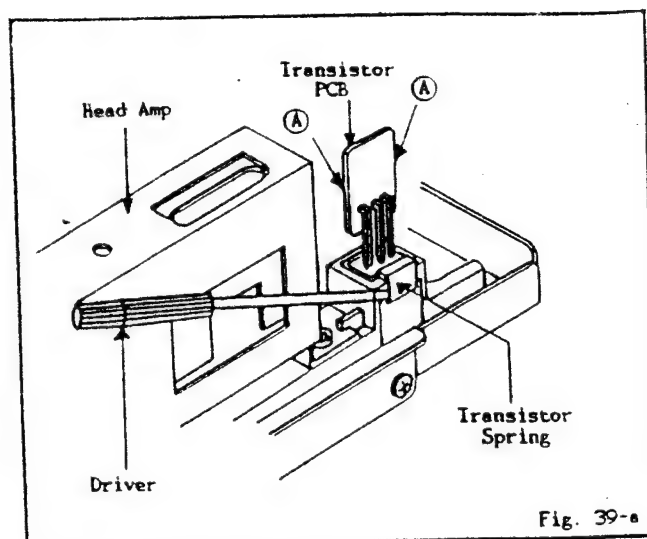
1. Insert a small minus(-) driver into the transistor spring as shown in Fig. 39-a.
2. Hold both the edges of transistor PCB (A part) with your fingers and pull out the transistor PCB while turning the driver.

● INSTALLATION

1. Set the transistor spring in the place marked as shown in Fig. 39-b.
2. Fit the transistor PCB as shown in Fig. 39-b.

● NOTE

1. The unit should be unplugged from the AC outlet.
2. Do not scratch or mar the cylinder.
3. Be careful not to split the transistor PCB.
4. If the transistor spring is broken when holding or removing the transistor PCB, replace new one.



ELECTRICAL ADJUSTMENT

Remove the following parts before operating electric adjustment.

1. Top Cabinet (2 screws)
2. Bottom Plate (5 screws)

After adjustment reassemble the unit in reverse order.

Prepare the following measurement tools for the electrical adjustment.

1. Oscilloscope (2 channel type)
2. AC Voltmeter
3. Quartz Timer
4. Sweep-Marker Generator
5. AFT Adjustment Oscillator
6. Synchro Scope
7. VIF Unit
8. Voltmeter
9. Frequency Counter
10. SIF Unit
11. Spectrum Analyzer
12. DC Supplier

ADJUSTMENT PROCEDURE

■ E-1~3: NOT REQUIRED FOR THIS MODEL

■ E-4: P.G. SHIFTER ADJUSTMENT

CONDITIONS

MODE - PLAYBACK

Input signal - Standard tape

NOTE: Tracking control should be set at click point.

INSTRUCTIONS

- (1) Connect CH-1 on the oscilloscope to TP2001 and connect CH-2 on the oscilloscope to TP4201.
- (2) Adjust VR2001 so that the waveform of the oscilloscope may become $6.5 \pm 0.5(H)$ at both leading and trailing edges as shown in Fig. 4-a, b.

CHARI/CHARACTERISTICS

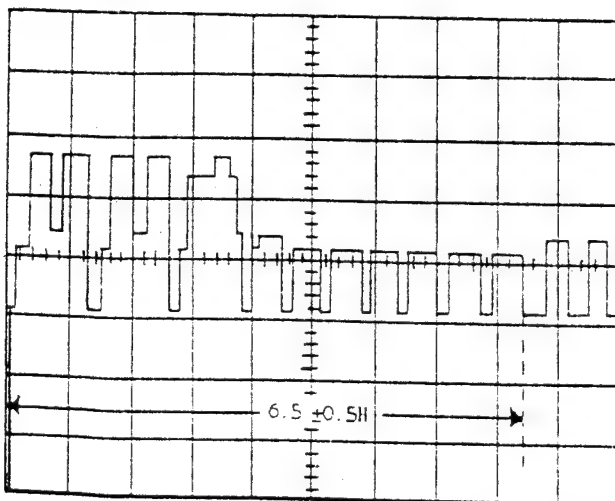


Fig. 4-a

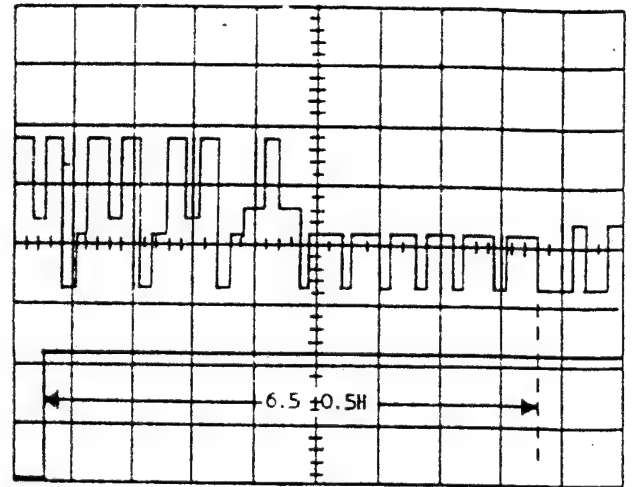


Fig. 4-b

■ E-5: NOT REQUIRED FOR THIS MODEL

■ E-6: TRACKING FIX ADJUSTMENT

CONDITIONS

MODE - PLAYBACK

Input signal - Standard tape

NOTE: Tracking control should be set at click point.

INSTRUCTIONS

- (1) Connect CH-1 on the oscilloscope to TP2001 and connect CH-2 on the oscilloscope to TP2003.
- (2) Playback the recorded portion and adjust VR2002 so that "I" portion may become $2.6 \pm 0.05V$ as shown in Fig. 6.

CHARI/CHARACTERISTICS

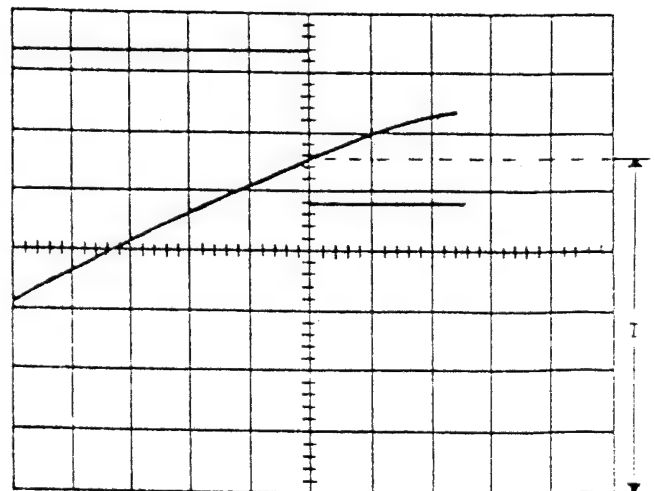


Fig. 6

■ E-7~11: NOT REQUIRED FOR THIS MODEL

■ E-12: E-E LEVEL ADJUSTMENT

CONDITIONS

MODE - STOP

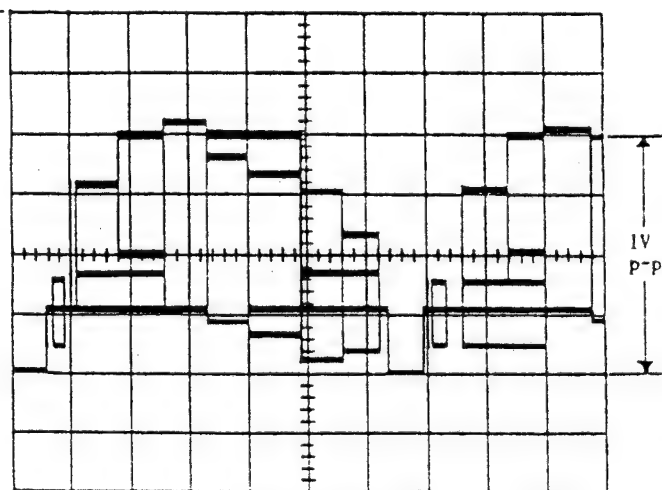
Input signal - Color bar

NOTE: Video out of the unit should be terminated with 75 ohm load.

INSTRUCTIONS

- (1) Connect the oscilloscope to TP4201.
- (2) Adjust VR4001 so that waveform may become $1.0 \pm 0.05V_{p-p}$ as shown in Fig. 12.

CHART/CHARACTERISTICS



200mv 10us/div

Fig. 12

■ E-13: NOT REQUIRED FOR THIS MODEL

■ E-14: VXO FREQUENCY ADJUSTMENT

CONDITIONS

MODE - PLAYBACK

Input signal - Color bar test tape

NOTE: Use high impedance probe for the input of counter. Proportion should be 10:1 when using the oscilloscope probe.

INSTRUCTIONS

- (1) Connect the frequency counter to TP3002.
- (2) Playback the test tape and adjust VR3001 to make $4.433619 \pm 10KHz$ as shown in Fig. 14.

■ E-15: WHITE CLIP ADJUSTMENT

CONDITIONS

MODE - RECORD

Input signal - Color bar

INSTRUCTIONS

- (1) Connect CH-1 on the oscilloscope to TP4201 and connect CH-2 on the oscilloscope to TP4005.
- (2) Adjust VR4005 so that waveform become as shown in Fig. 15.

VR4005 - - White Clip ($185 \pm 5\%$)

CHART/CHARACTERISTICS

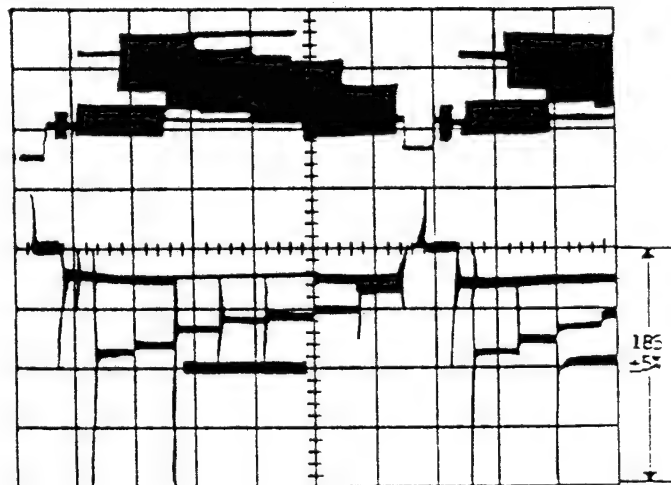


Fig. 15

■ E-16: CARRIER AND DEVIATION ADJUSTMENT

CONDITIONS

MODE - RECORD

Input signal - Color bar

INSTRUCTIONS

- (1) Connect TP4004 to the input terminal on the spectrum analyzer, then adjust 3.8MHz and 4.8MHz as shown in Fig. 16 with VR4002 and VR4003.

VR4004 (Deviation)
VR4003 (FM Carrier)

CHART/CHARACTERISTICS

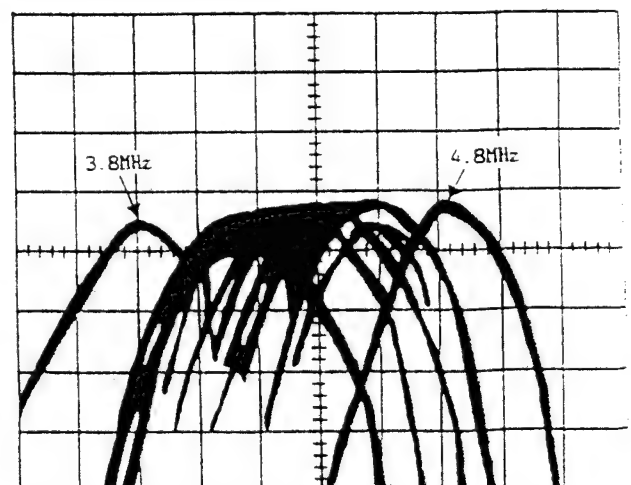


Fig. 16

E-17: RECORD CURRENT ADJUSTMENT

CONDITIONS

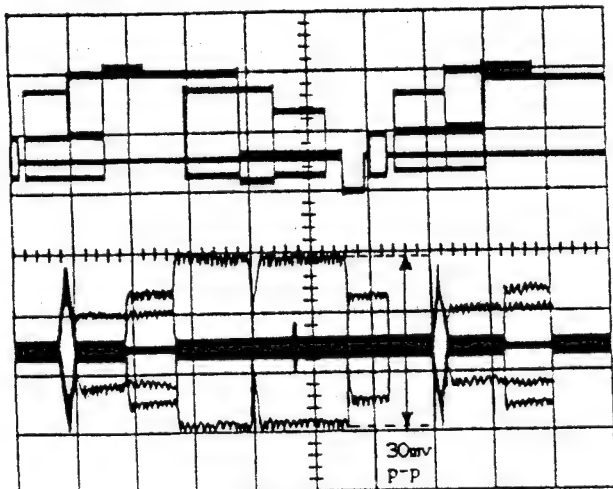
MODE - RECORD

Input signal - Color bar

INSTRUCTIONS

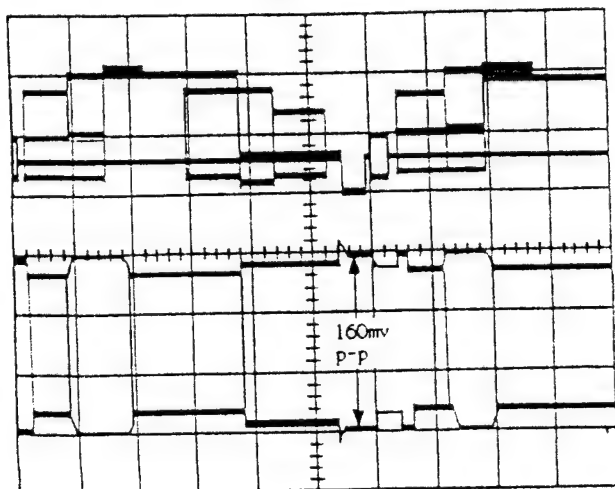
- (1) Connect CH-1 of the oscilloscope to TP4101 and CH-2 to TP4201.
Reduce brightness signal factors by turning VR4102 fully counter-clockwise.
- (2) Adjust VR4101 so that the cyan level may become $30 \pm 2\text{mVp-p}$ as shown in Fig. 17-a.
- (3) Adjust VR4102 so that the horizontal sync. level may become $160 \pm 5\text{mVp-p}$, as shown in Fig. 17-b.

CHART/CHARACTERISTICS



10mv 10us/div

Fig. 17-a



50mv 10us/div

Fig. 17-b

E-18: PLAYBACK LUMINANCE LEVEL ADJUSTMENT

CONDITIONS

MODE - PLAYBACK

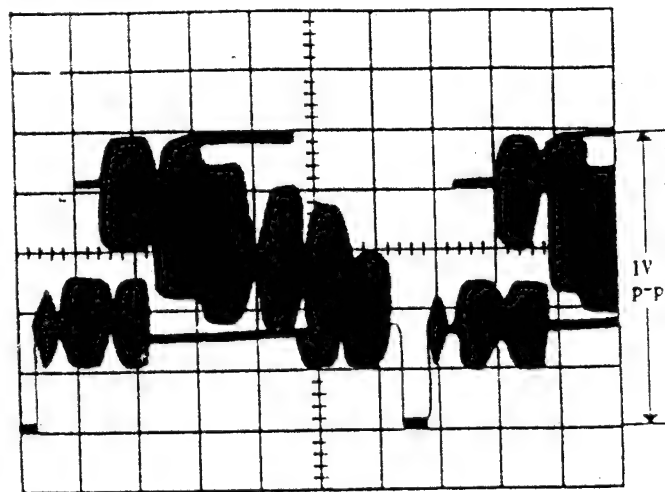
Input signal - Color bar test tape

NOTE: The above adjustment values are measured with the video output jack terminated with 75 ohm resistor.

INSTRUCTIONS

- (1) Connect oscilloscope to TP4201.
- (2) Adjust VR4002 so that the signal may become $1.0 \pm 0.05\text{Vp-p}$.

CHART/CHARACTERISTICS



200mv 10us/div

Fig. 18

E-19: AUDIO BIAS CURRENT ADJUSTMENT

CONDITIONS

MODE - RECORD

Input signal - No signal

INSTRUCTIONS

- (1) Remove the shield plate.
- (2) Connect the AC voltmeter to the arrow point, then adjust the voltage to $3.3 \pm 0.1\text{mVrms}$ with VR5002.
- (3) After adjustment, lift up the shield plate.

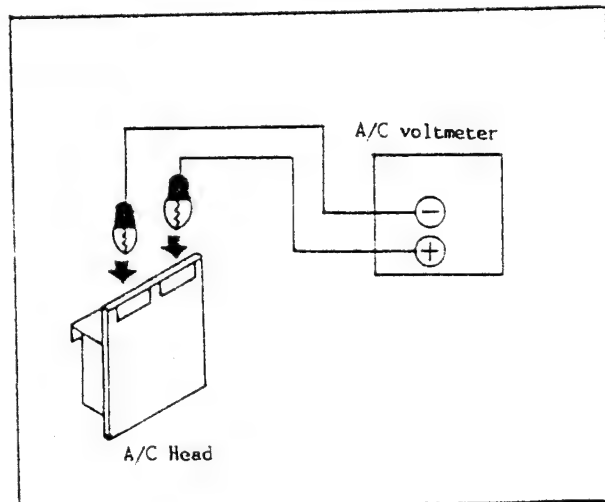


Fig. 19

E-20: AUDIO PLAYBACK LEVEL ADJUSTMENT

CONDITIONS

MODE - Self(RECORD and PLAYBACK)

Input signal - 1KHz 300Vrms, Audio signal
Color bar, Video signal.

INSTRUCTIONS

- (1) Connect the AC voltmeter to audio out jack, which is terminated with 47K ohm resistor.
- (2) Record and then playback the audio signal as specified.
- (3) Adjust VR5001 so that the playback output may become $390 \pm 10, -20\text{mVrms}$.

- E-21~27: NOT REQUIRED FOR THIS MODEL
- E-28: SECAM IDENTIFICATION ADJUSTMENT

CONDITION

MODE - RECORD

Input signal - (SECAM) Video RF
SECAM signal

SECAM Input Level 35dB

SECAM Input Level 37dB

INSTRUCTIONS

- (1) Connect CH-1 of oscilloscope to TP4201 and CH-2 of oscilloscope to TP3702.
- (2) Adjust L3702 so that peak of waveform A and leading edge of video signal of waveform B may become same as shown in Fig. 28.

CHART/CHARACTERISTICS

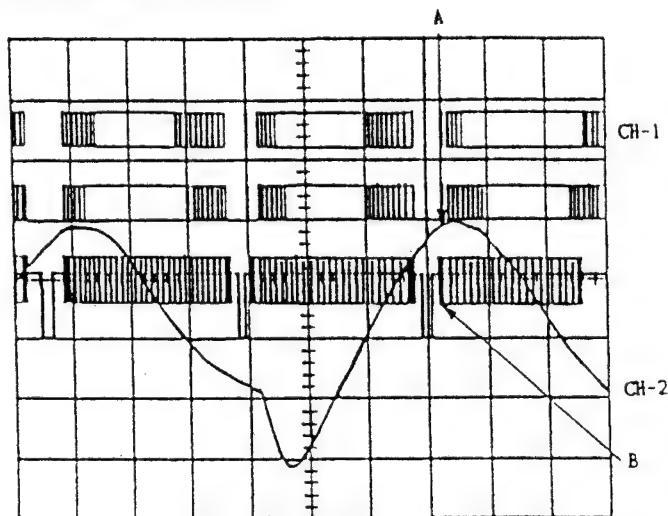


Fig. 28

- E-29~57: NOT REQUIRED FOR THIS MODEL
- E-58: NOISE CANCEL ADJUSTMENT

CONDITION

MODE - PLAYBACK

Input signal - Color bar test tape

NOTE: The above adjustment values are measured with the video output jack terminated with 75 ohm resistor.

INSTRUCTIONS

- (1) Connect CH-1 of the oscilloscope to TP4002 and CH-2 to TP4201.
- (2) Adjust the VR4006 so that the waveform of CH-1 is straight as shown in Fig. 58.

CHART/CHARACTERISTICS

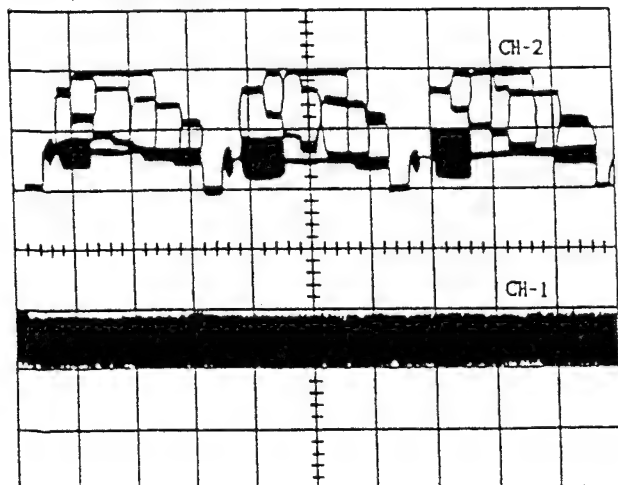


Fig. 58

- E-59, E-60: NOT REQUIRED FOR THIS MODEL

- E-61: VIDEO IF ADJUSTMENT

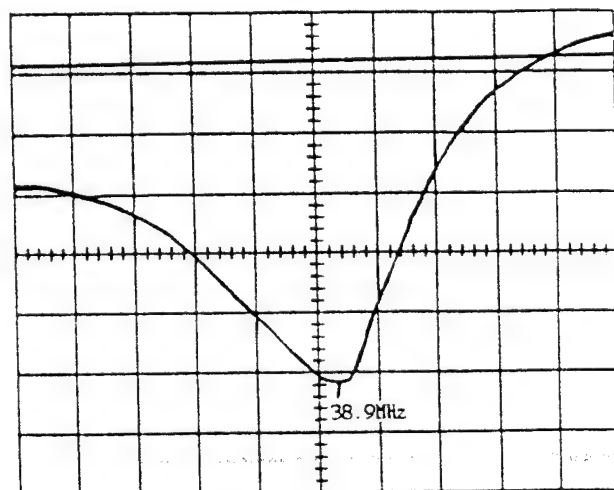
INSTRUCTIONS

- (1) Supply 12V with the DC Supplier.
- (2) Terminate TP6004 and TP6005 to 100 ohm.



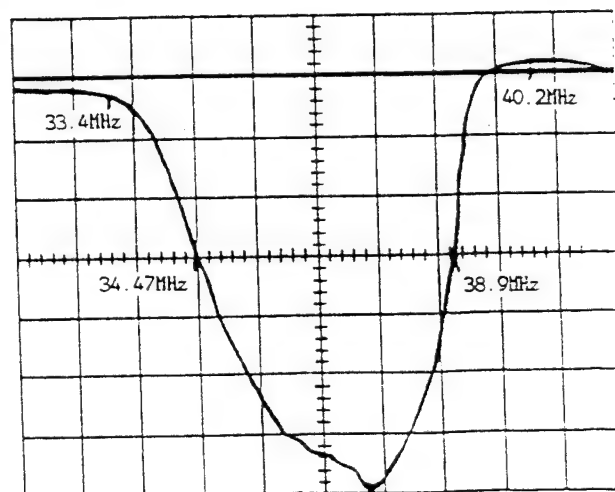
- (3) Connect the output of Sweep-Marker Generator to TP6001.
- (4) Adjust L6004 so that output waveform of TP6002 may become as shown in Fig. 61-a.
- (5) Connect the output of Sweep-Marker Generator to the Tuner Pack TP.
- (6) Make sure that the output of waveform of TP6002 is as shown in Fig. 61-b.

CHART/CHARACTERISTICS



Single peak waveform

Fig. 61-a

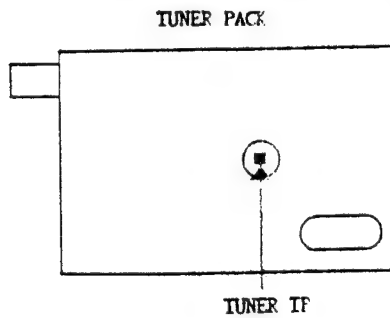


Over all waveform

Fig. 61-b

■ E-62: AFT ADJUSTMENT

NOTE: Before adjustment, connect the 2.2K ohm resistor between the Tuner Pack IP and the AFT adjustment oscillator(38.9MHz).



INSTRUCTIONS

- (1) Connect the output of the AFT adjustment oscillator to the Tuner Pack IP.
- (2) Connect TP6006 to the Voltmeter and adjust L6005 so that the voltage in the AFT switch ON mode is equal to the AFT switch OFF mode.

■ E-63: NOT REQUIRED FOR THIS MODEL

■ E-64: RF AGC ADJUSTMENT

CONDITIONS

MODE - STOP
AFT SW - ON

INSTRUCTIONS

- (1) Receive the signal of Monochrome Pattern.
- (2) Connect the DC Voltmeter to TP6007.
- (3) Set the RF input to 80dB.
- (4) Adjust VR6001 so that the voltage is equal to $2.7 \pm 0.1V$.

■ E-65: COLOR LEVEL ADJUSTMENT

CONDITIONS

MODE - STOP
AFT SW - ON

INSTRUCTIONS

- (1) Receive the signal of color bar.
- (2) Connect the oscilloscope to TP6102.
- (3) Adjust VR6002 so that the magenta level is $45 \pm 5\%$ when Y-level is 1Vp-p.

CHART/CHARACTERISTICS

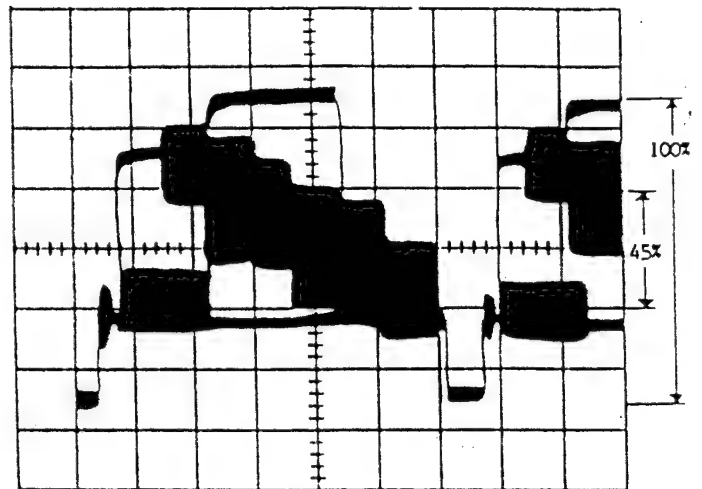


Fig. 65

■ E-66: CLOCK ADJUSTMENT

CONDITIONS

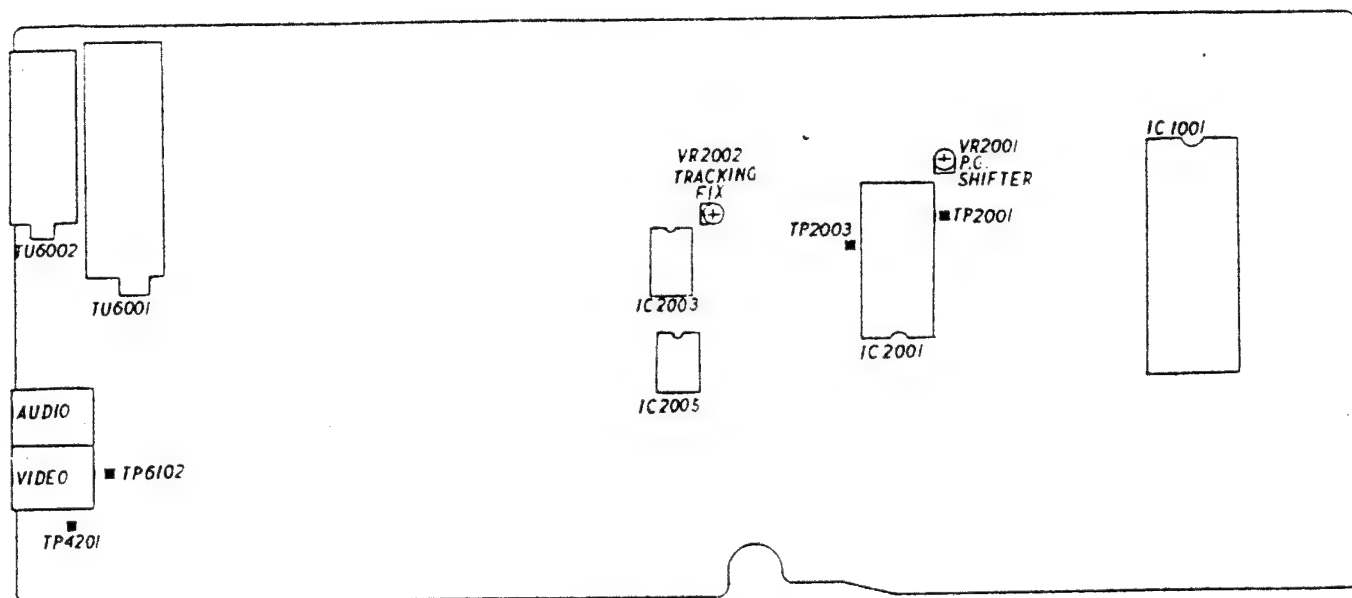
MODE - STOP
POWER ON
CLOCK SET

NOTE: Quartz timer should be supplied with the power more than 30 minutes before the adjustment.

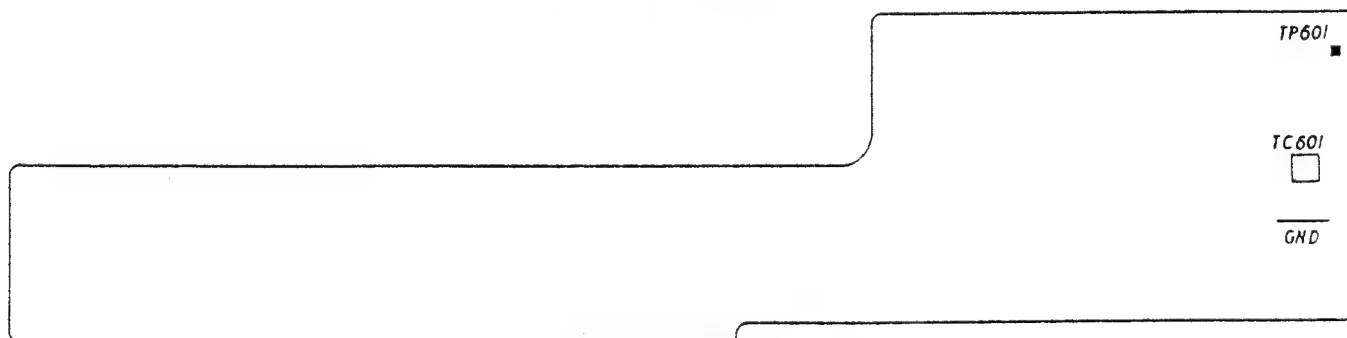
INSTRUCTIONS

- (1) Connect the Quartz timer to TP601.
- (2) Adjust TC601 so that day difference is within 0.15 sec.

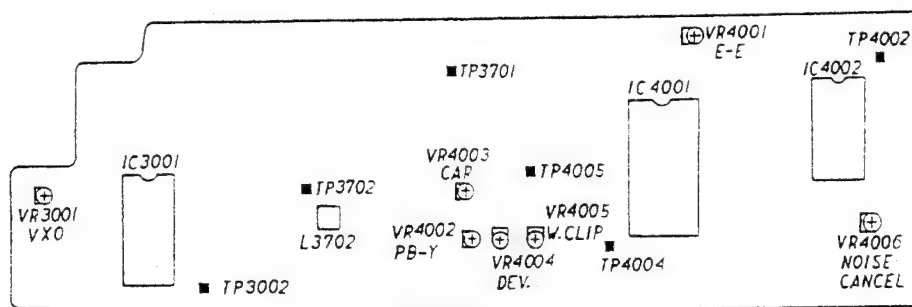
MAJOR COMPONENTS LOCATION GUIDE



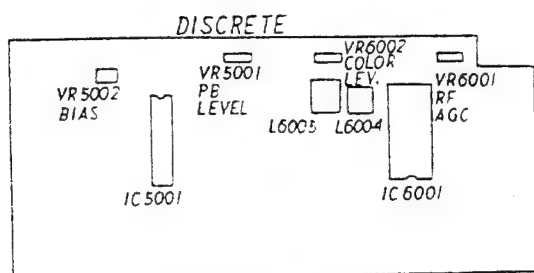
MAIN P.C. BOARD



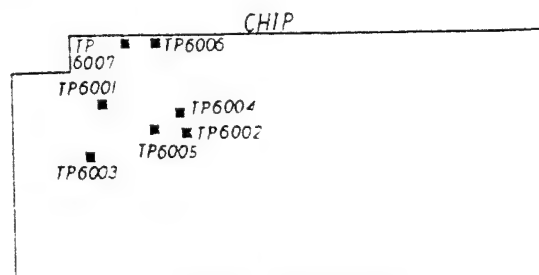
OPERATION P.C. BOARD



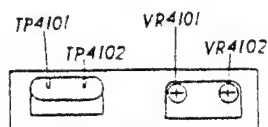
Y/C P.C. BOARD



AUDIO/VIF P.C. BOARD

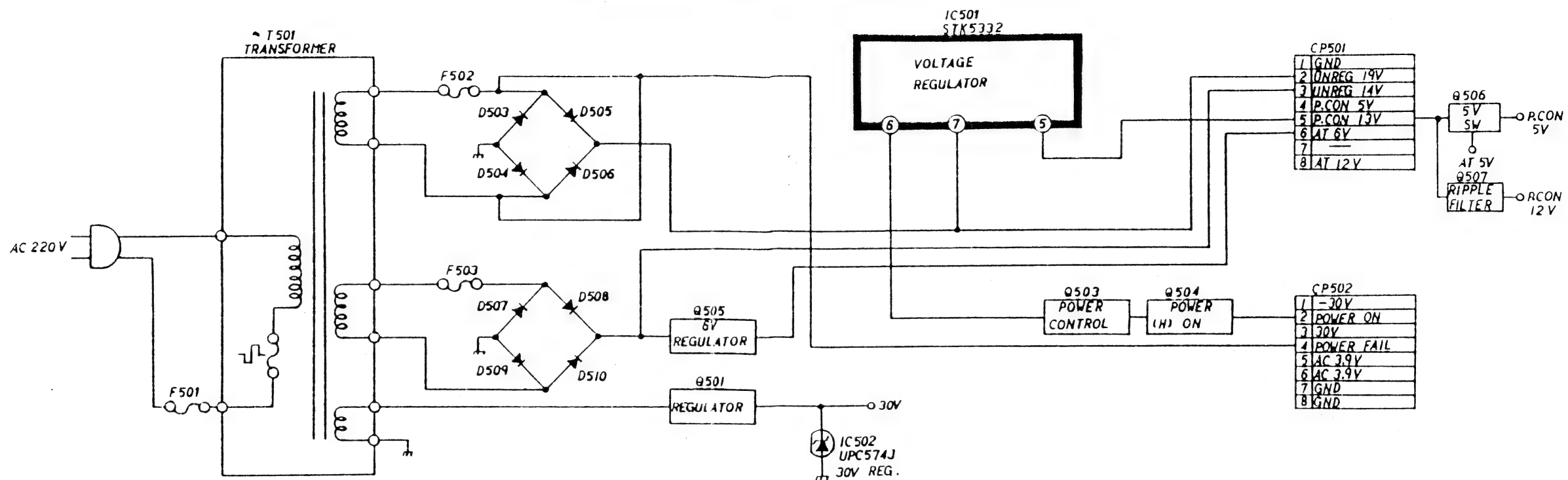


AUDIO/VIF P.C. BOARD

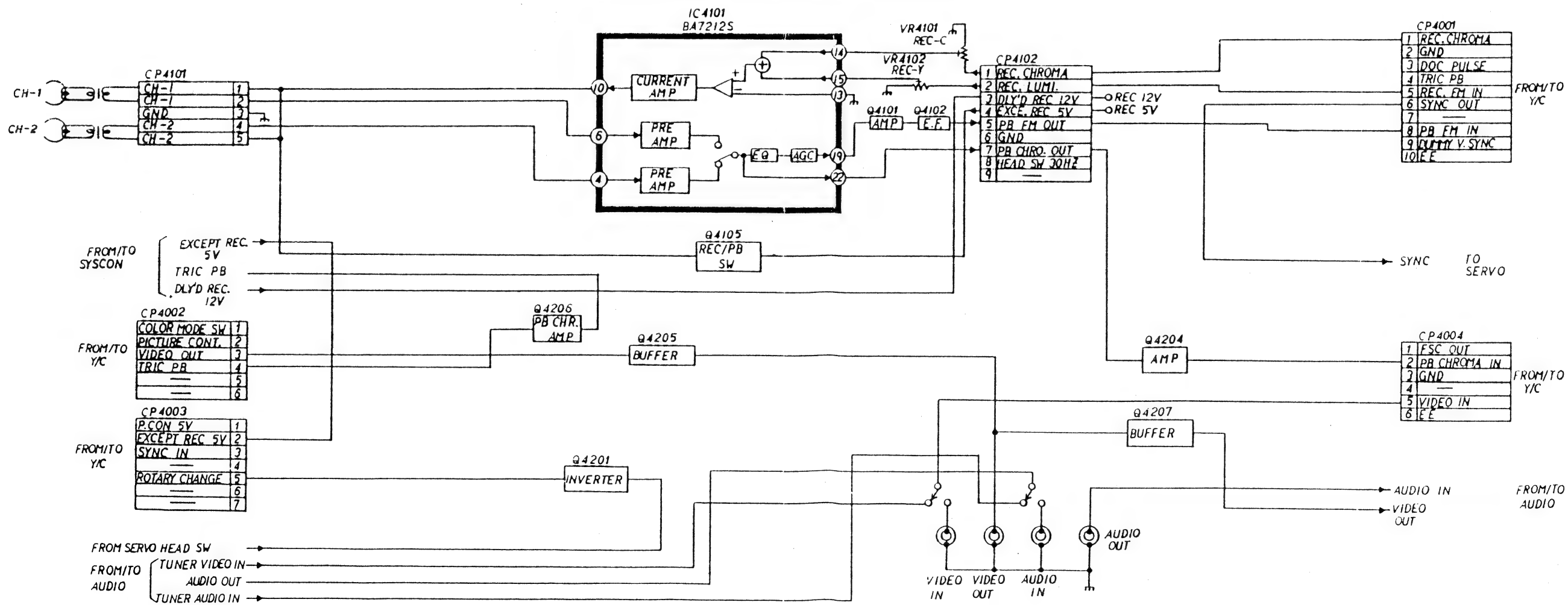


HEAD AMP

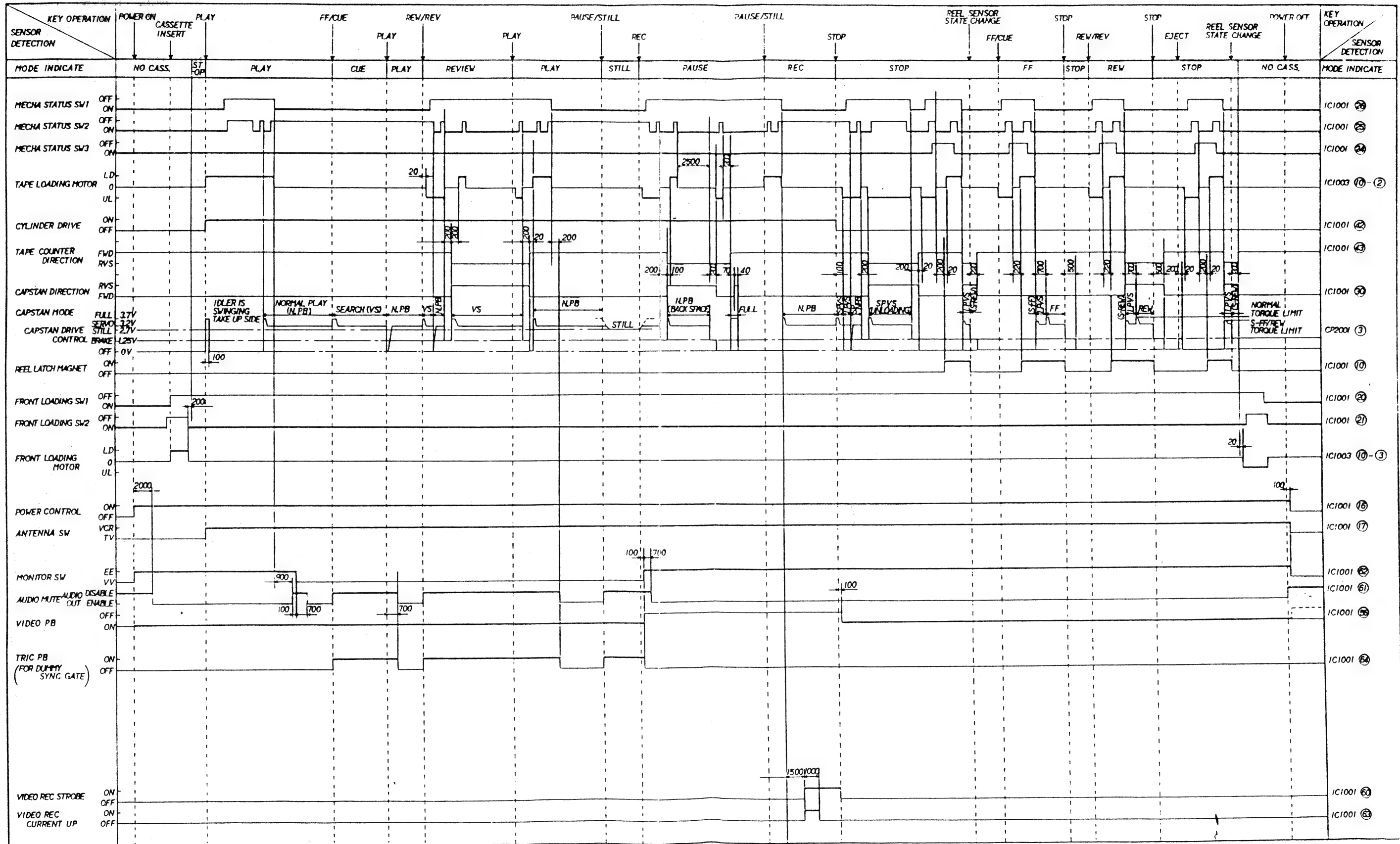
POWER SUPPLY BLOCK DIAGRAM



HEAD AMP BLOCK DIAGRAM



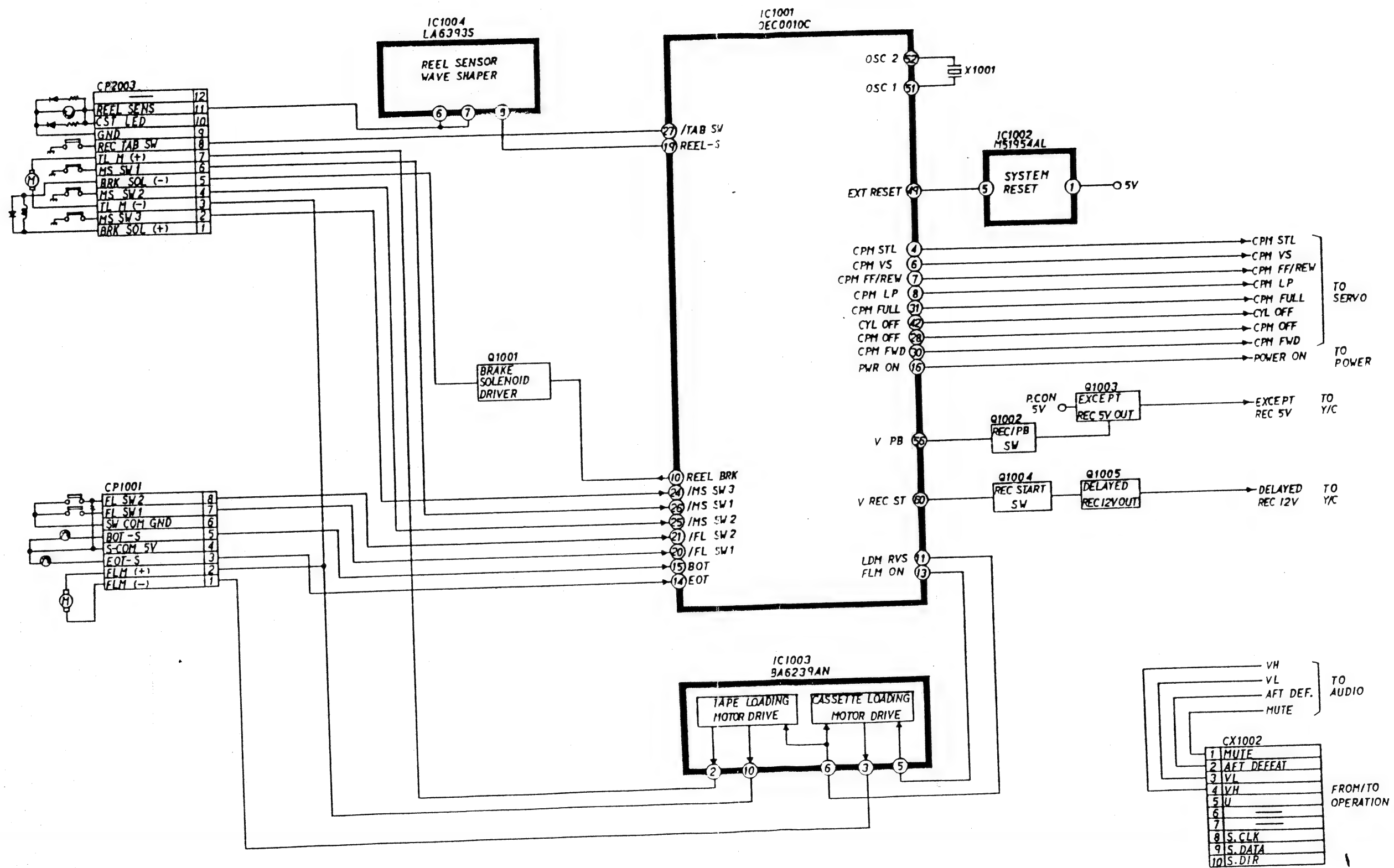
TIMING CHART



TIMING VALUES IN (ms)
TIMING WAVEFORM : _____ INACTIVE SIDE
 _____ ACTIVE SIDE

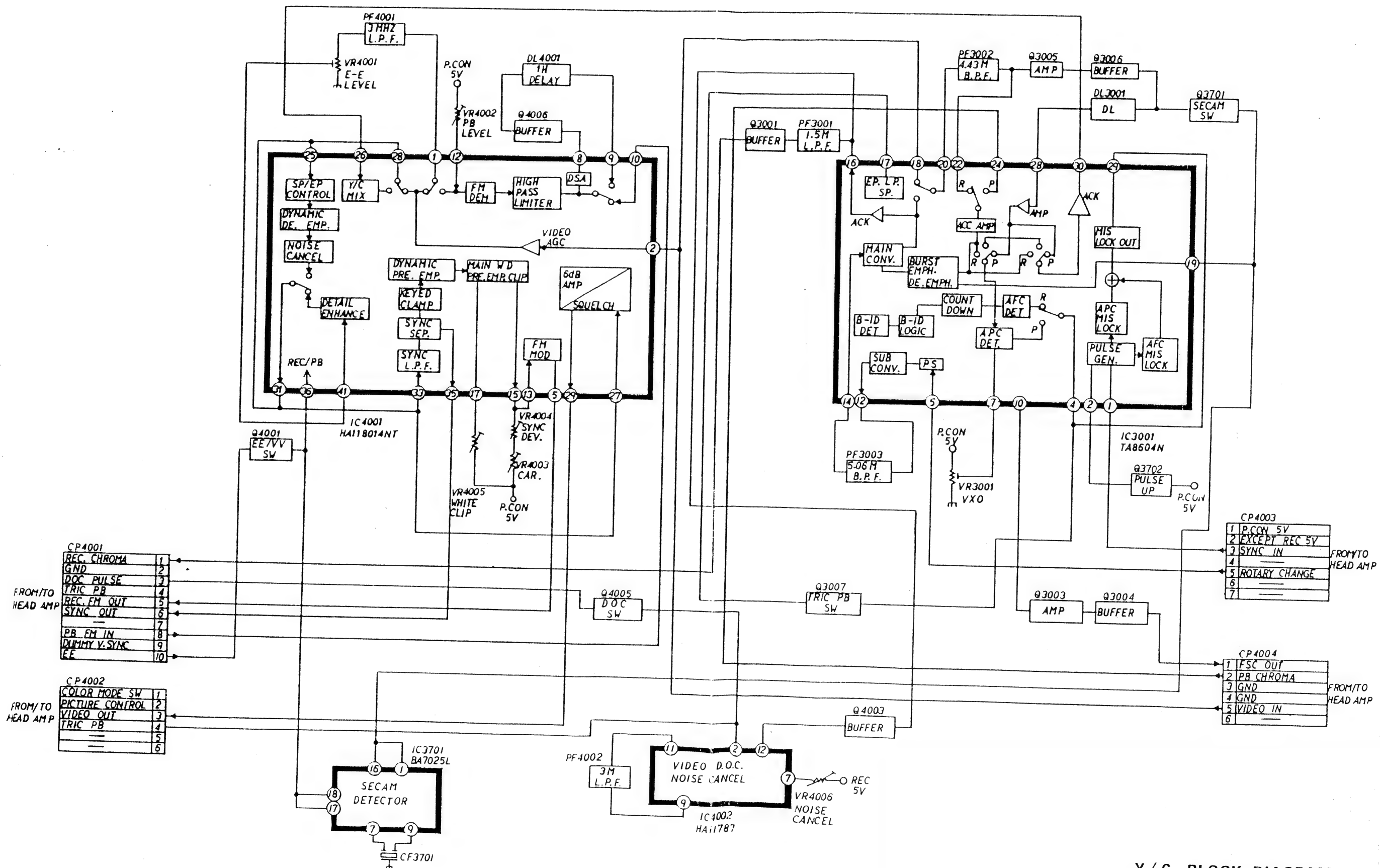
TIMING CHART
1-4546

SYSTEM CONTROL BLOCK DIAGRAM

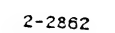


SYSTEM CONTROL BLOCK DIAGRAM

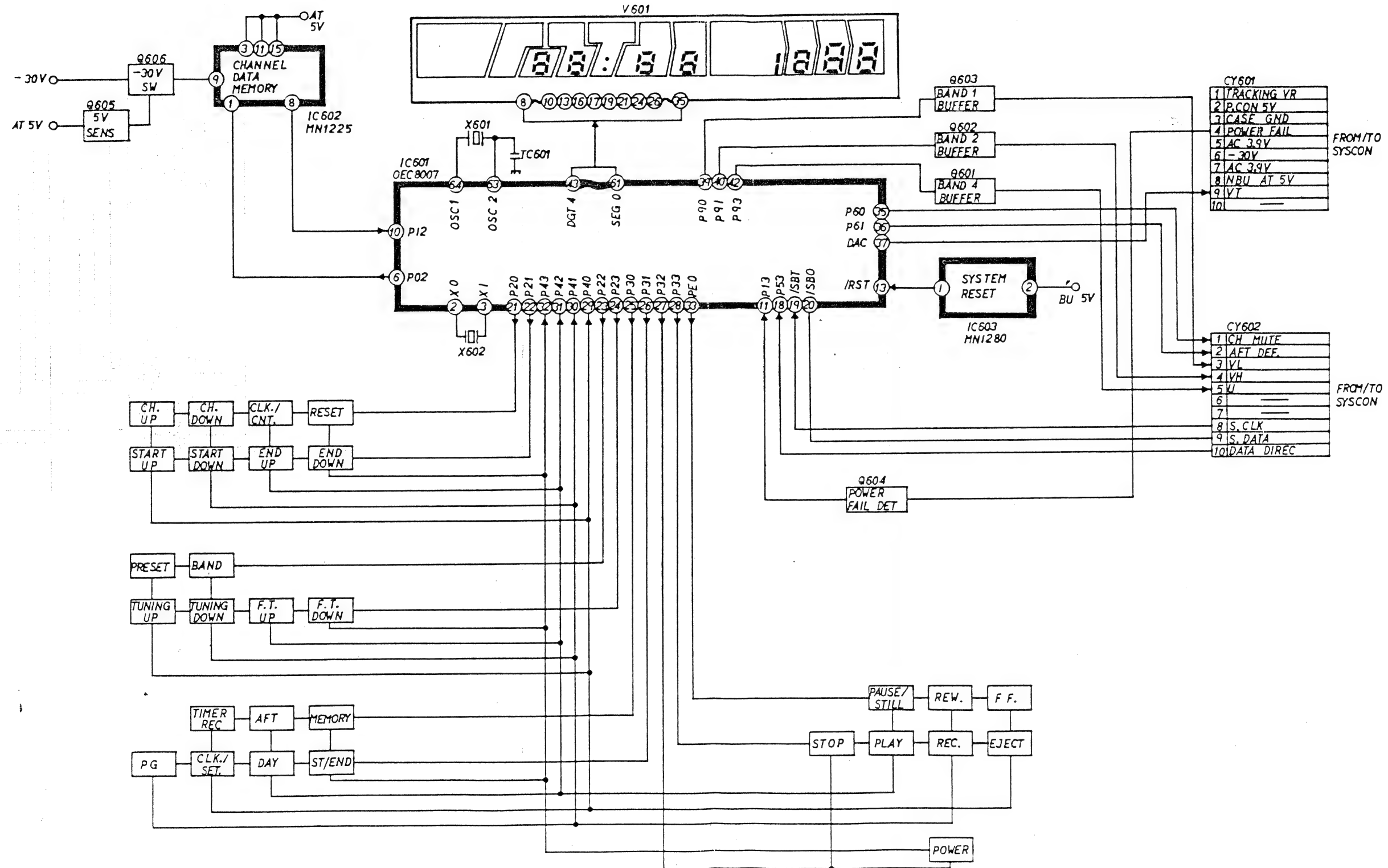
Y / C BLOCK DIAGRAM



SERVO BLOCK DIAGRAM

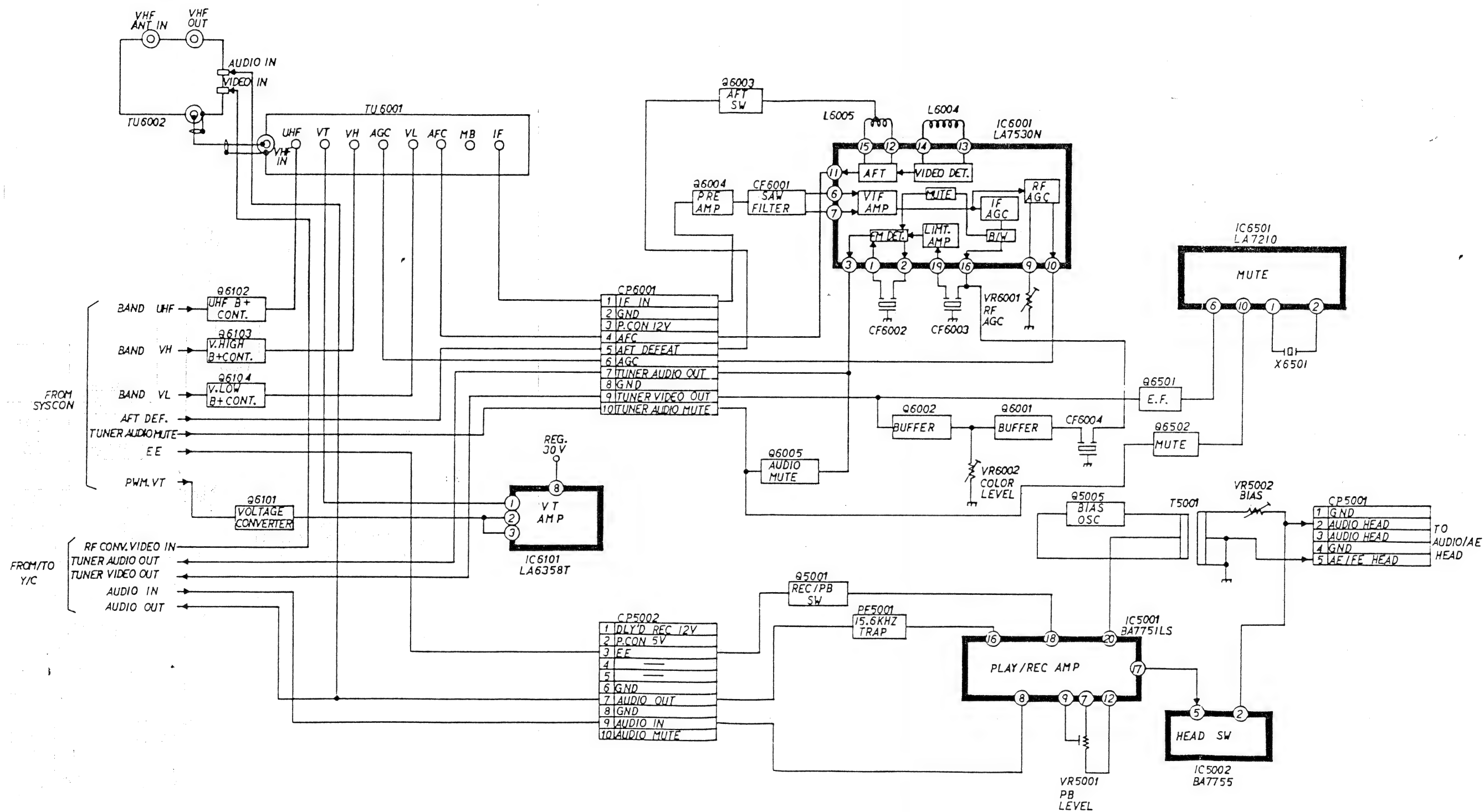


OPERATION BLOCK DIAGRAM

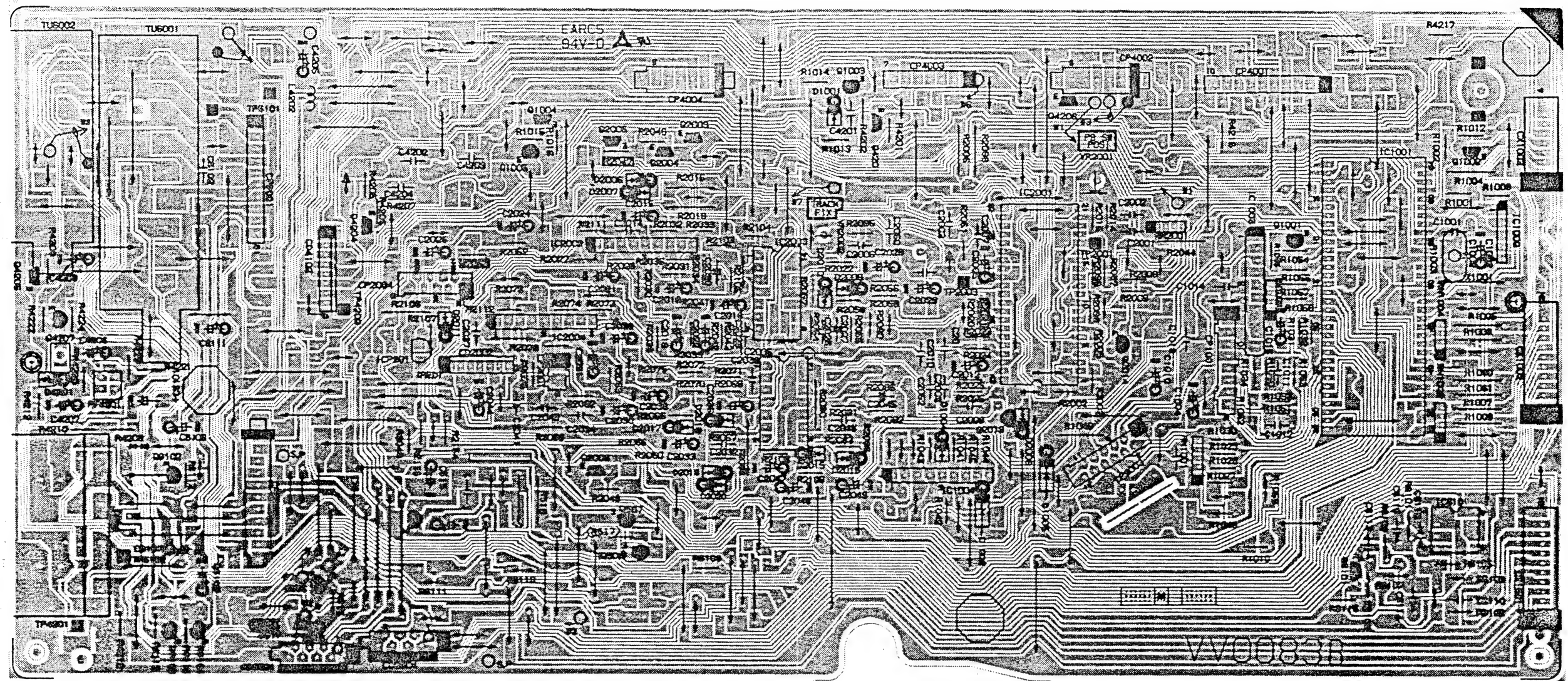


OPERATION BLOCK DIAGRAM

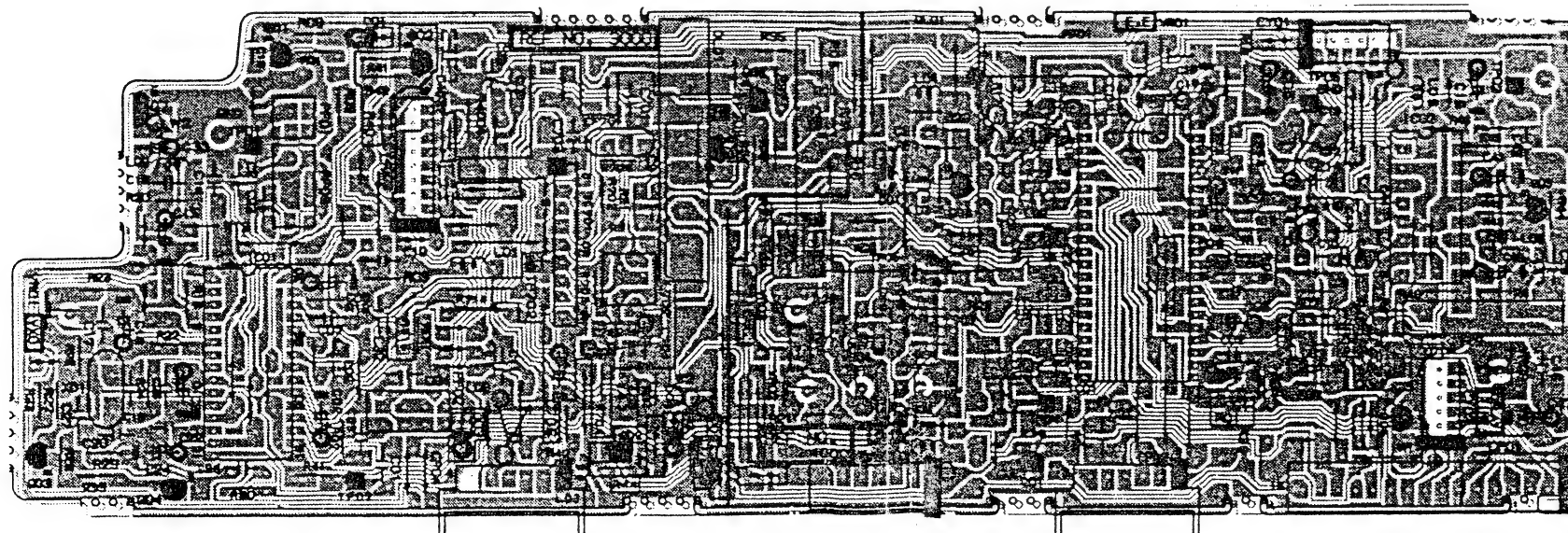
AUDIO / VIF BLOCK DIAGRAM



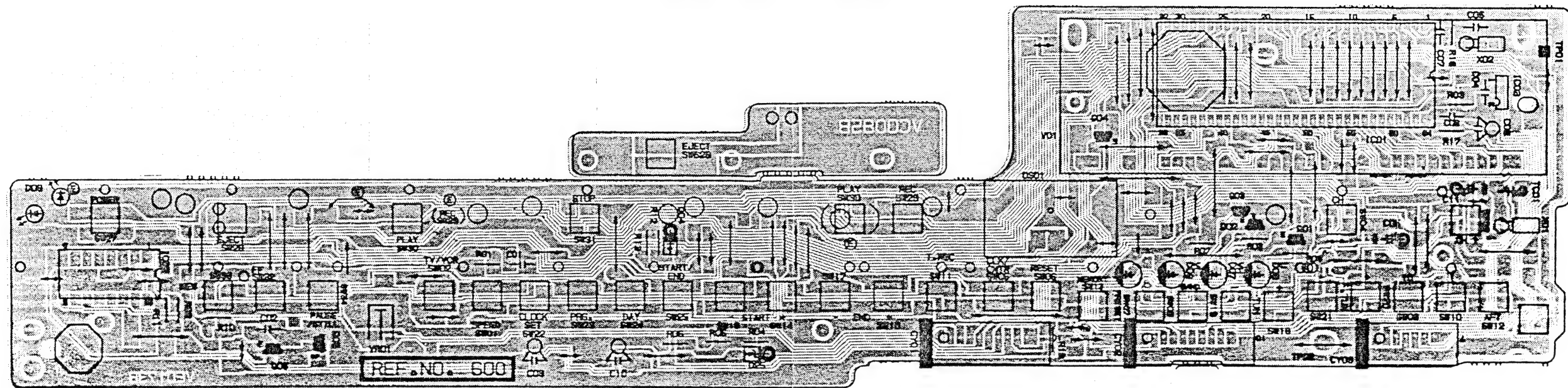
MAIN P.C.BOARD



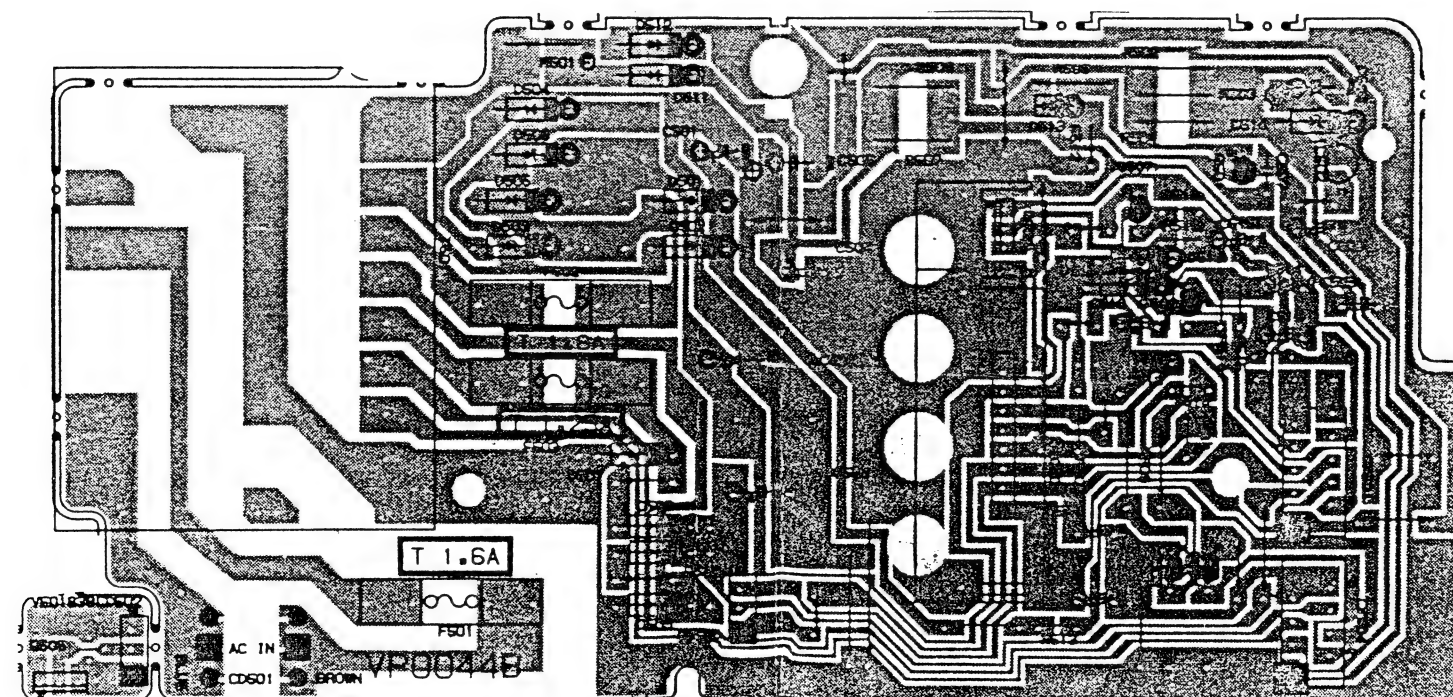
Y/C P.C.BOARD



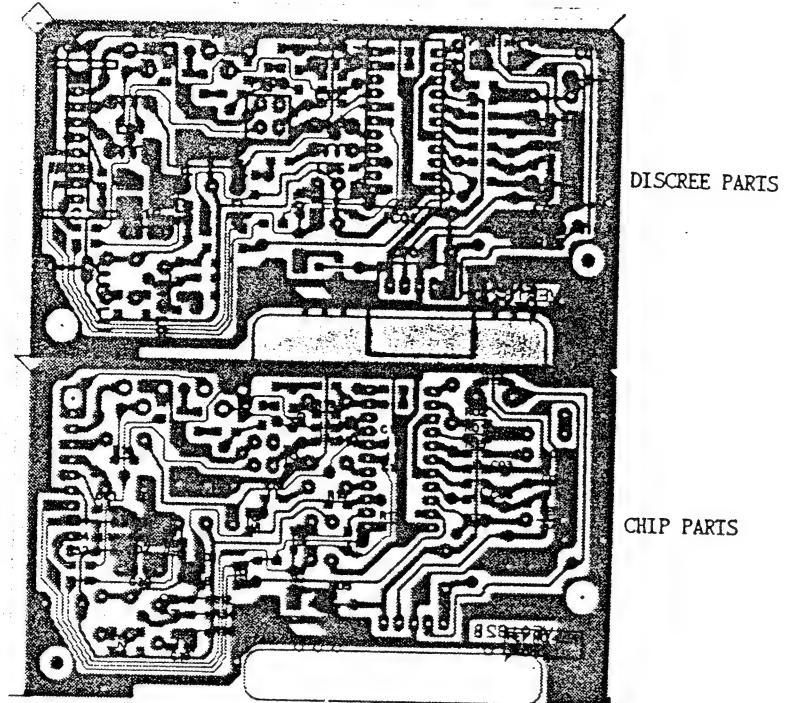
OPERATION P.C.BOARD



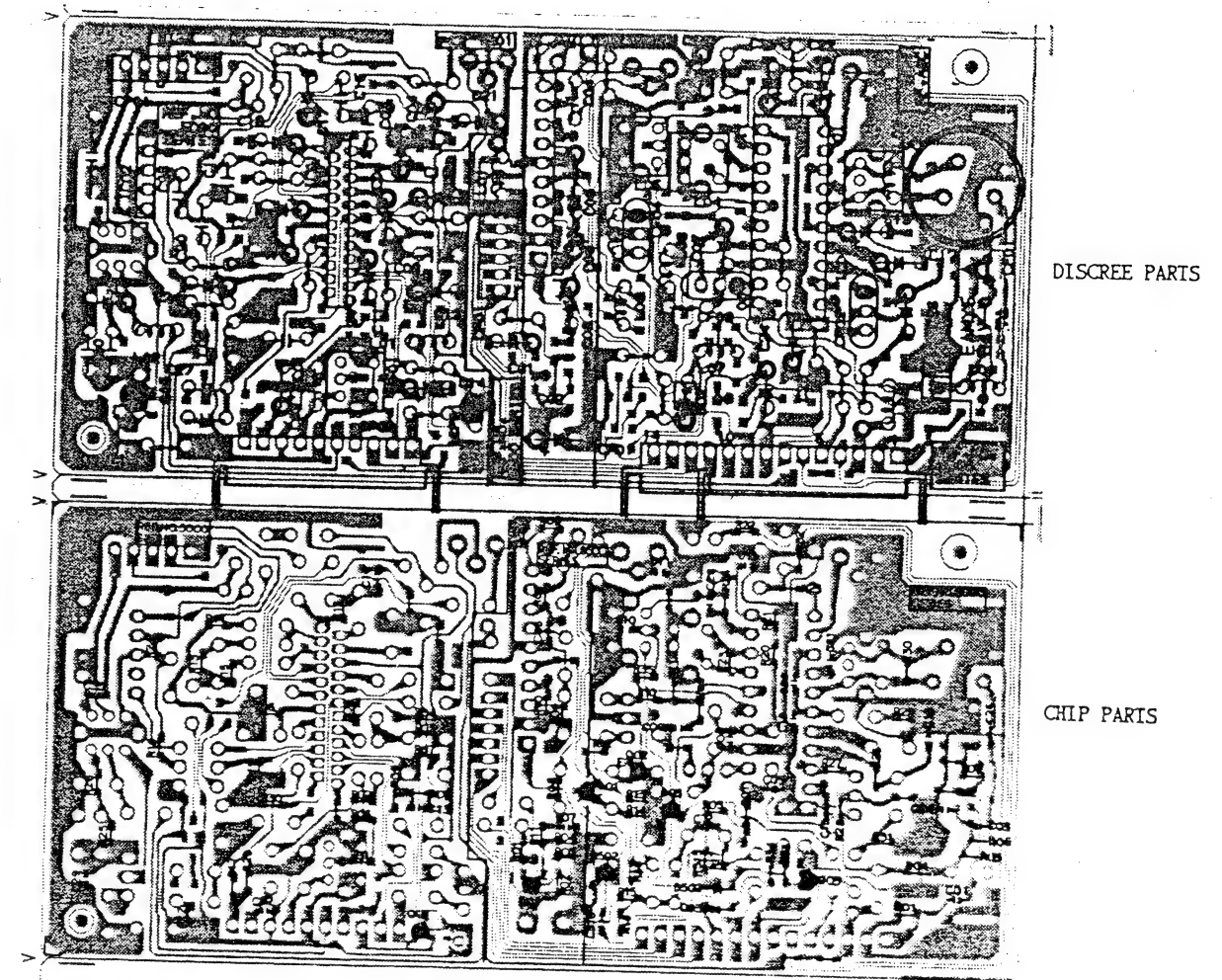
POWER/TRANSISTOR P.C.BOARD



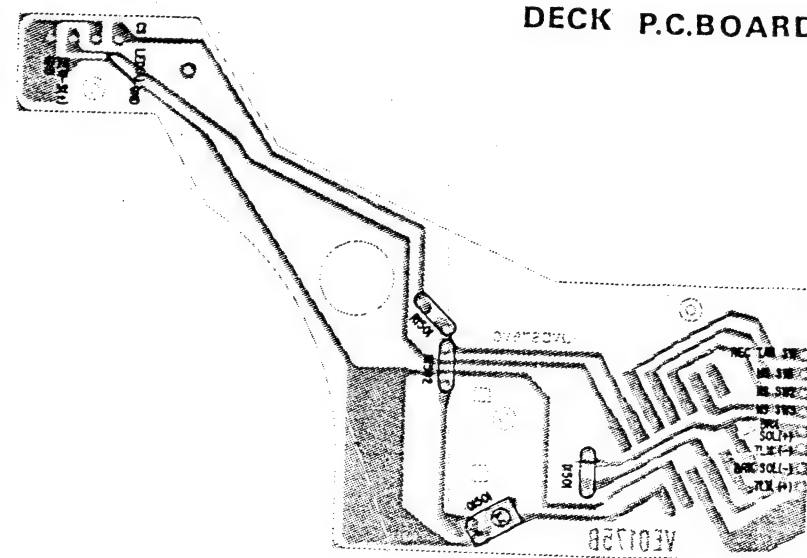
HEAD AMP P.C.BOARD

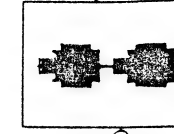
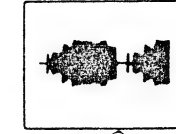
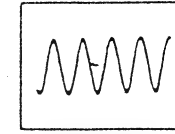
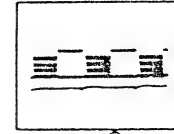
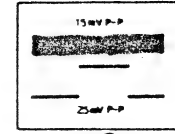
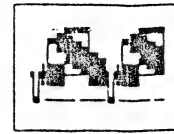
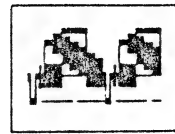
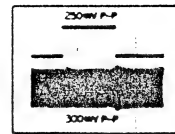


AUDIO/VIF P.C.BOARD



DECK P.C.BOARDS





NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

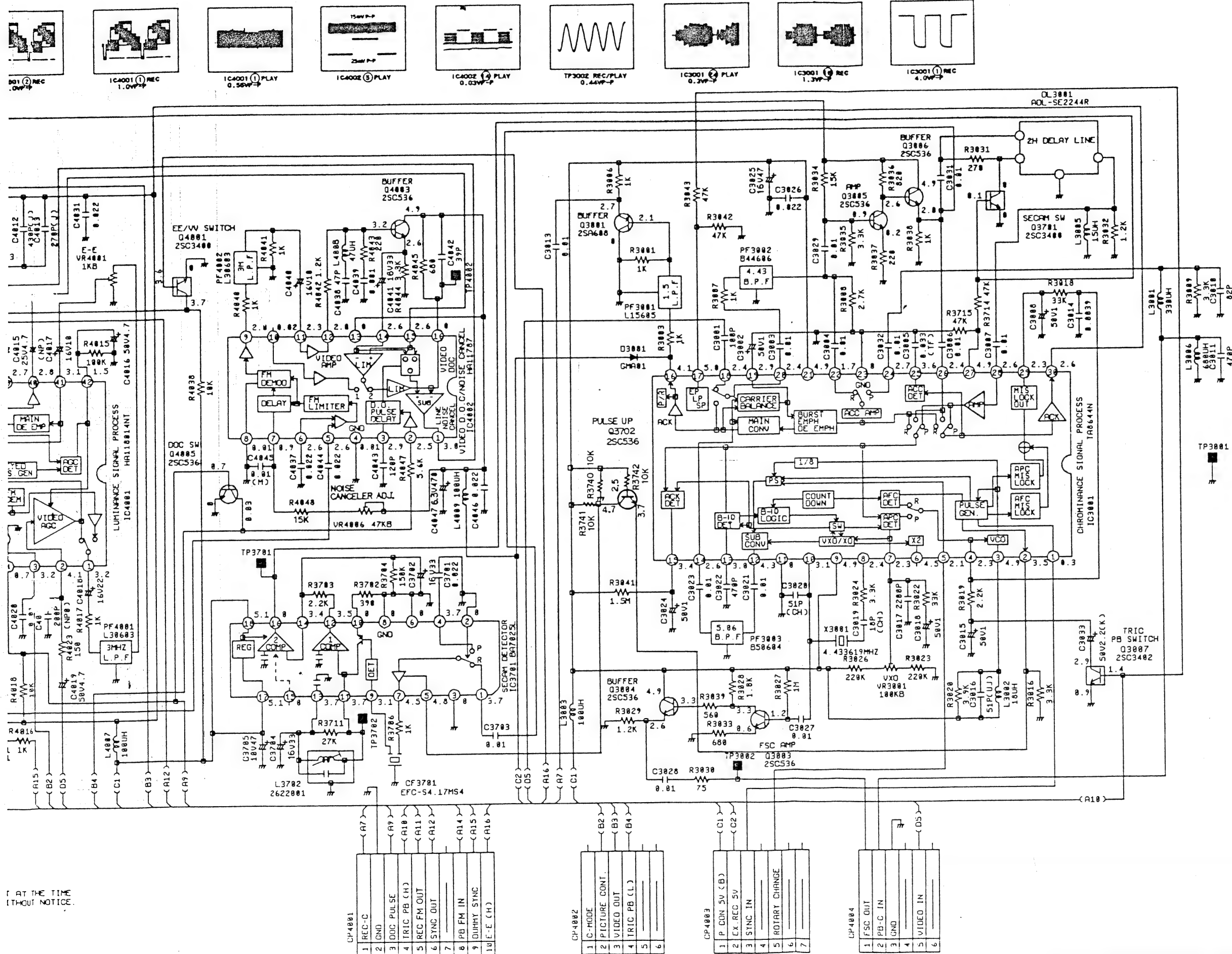
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2	GND	
3	LOG PULSE	(A9)
4	TRIG PB (H)	(A10)
5	REC FM OUT	(A11)
6	SYNC OUT	(A12)
7	—	
8	PB FM IN	(A14)
9	DUPPLY SYNC	(A15)
10	—	
11	—	(A16)

1	C MODE	
2	PICTURE CONT.	(B2)
3	VIDEO OUT	(B3)
4	TRIC PB (L)	(B4)
5	_____	

1	P CON 5V (B)	(C1)
2	EX REC 5V	(C2)
3	SYN IN	
4		
5	NOTARY CHANGE	
6		
7		

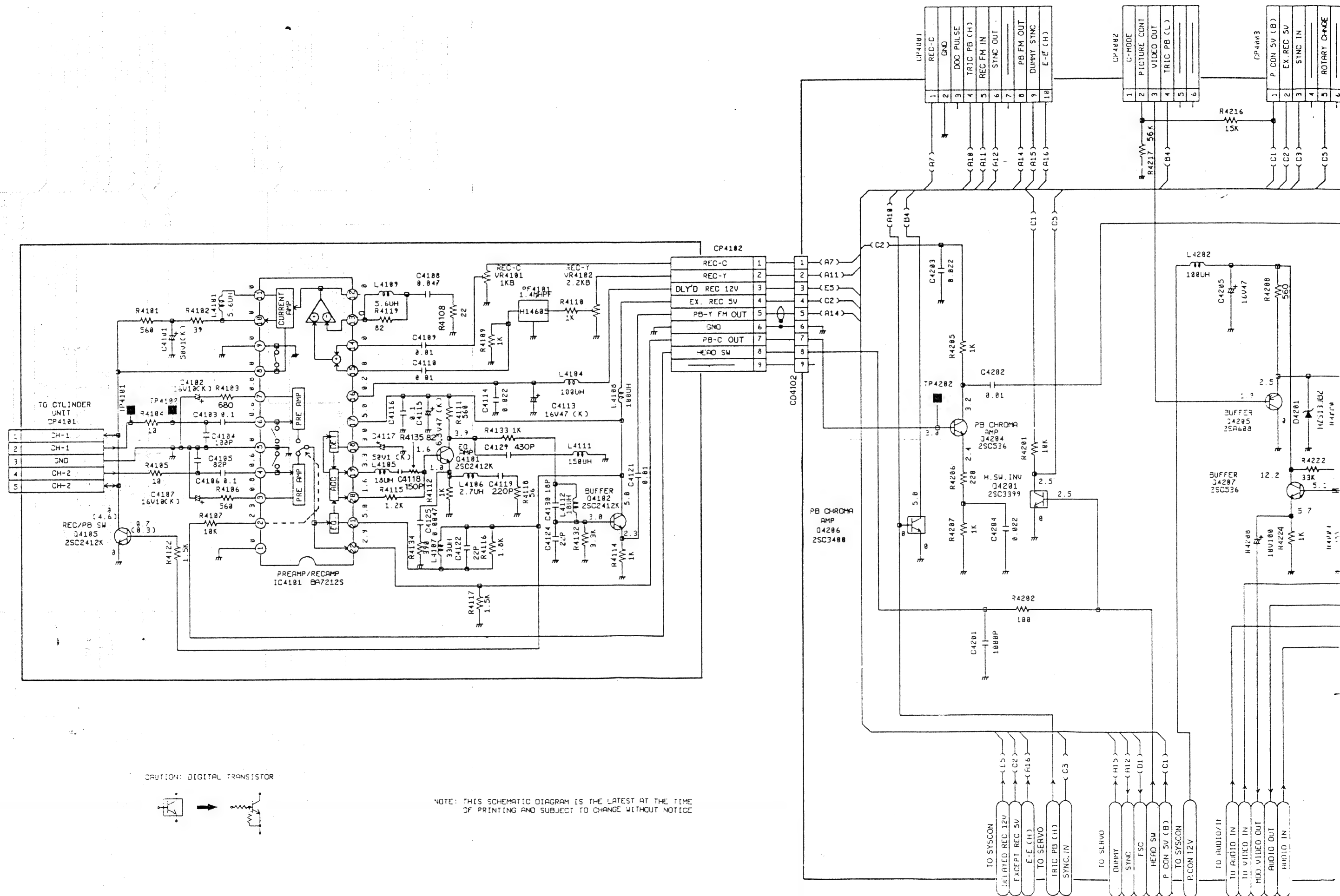
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1000000
500000
0

Y/C SCHEMATIC DIAGRAM

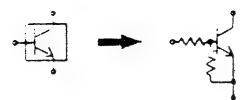


Y/C SCHEMATIC DIAGRAM

Y/C / HEAD AMP SCHEMATIC DIAGRAM

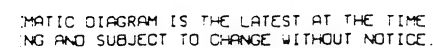


CAUTION: DIGITAL TRANSISTOR

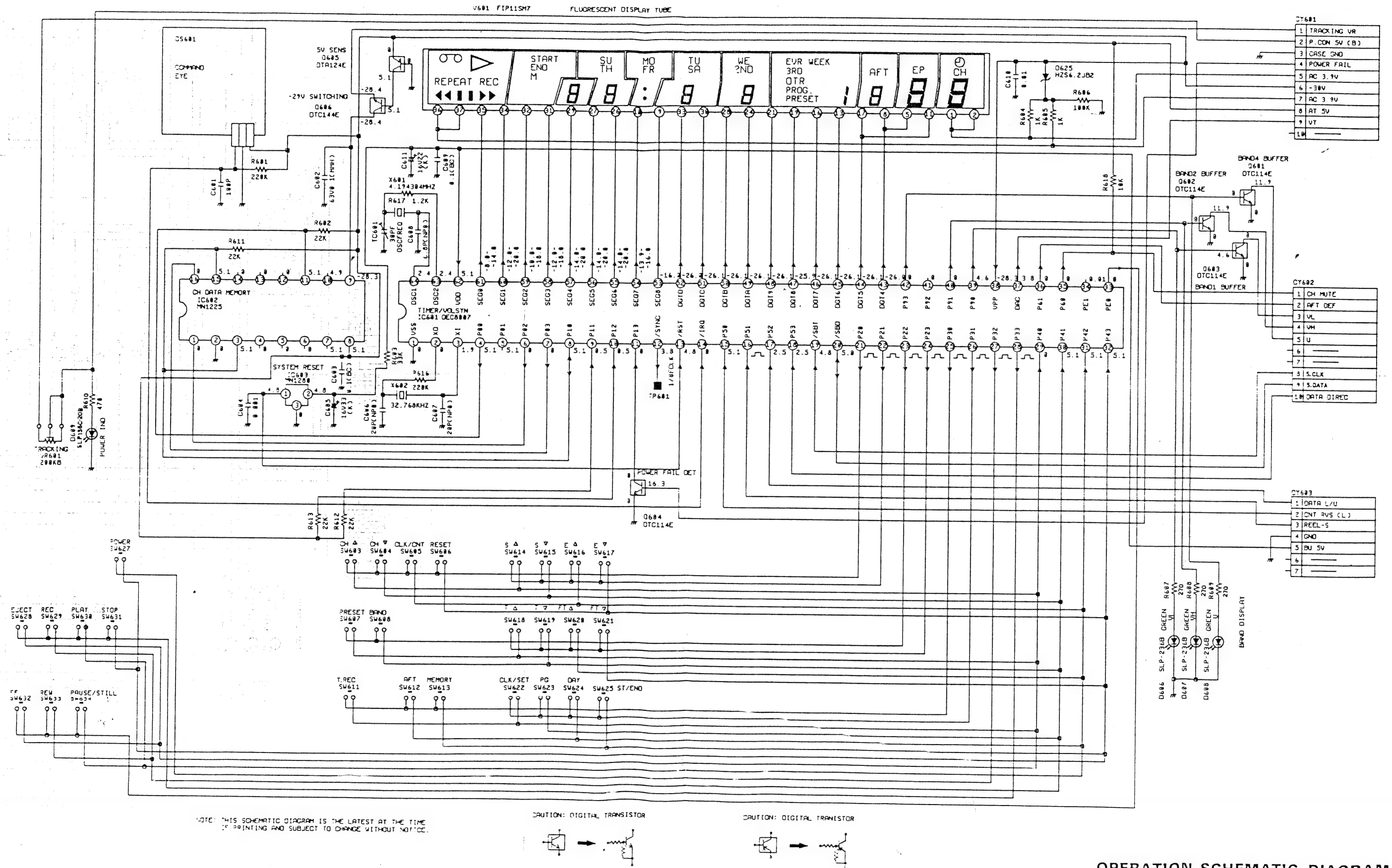


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

Y/C / HEAD AMP SCHEMATIC DIAGRAM



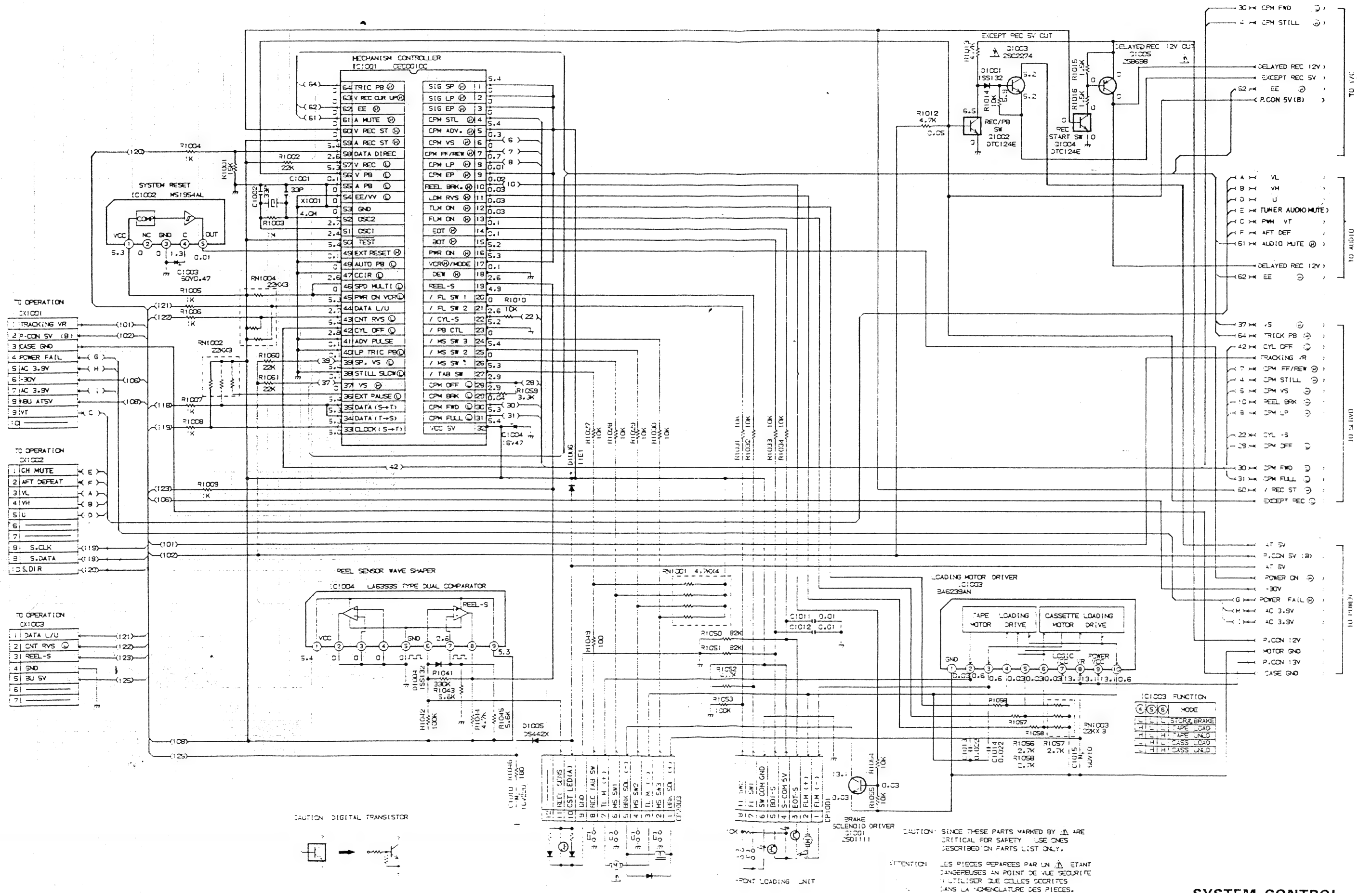
OPERATION SCHEMATIC DIAGRAM



OPERATION SCHEMATIC DIAGRAM

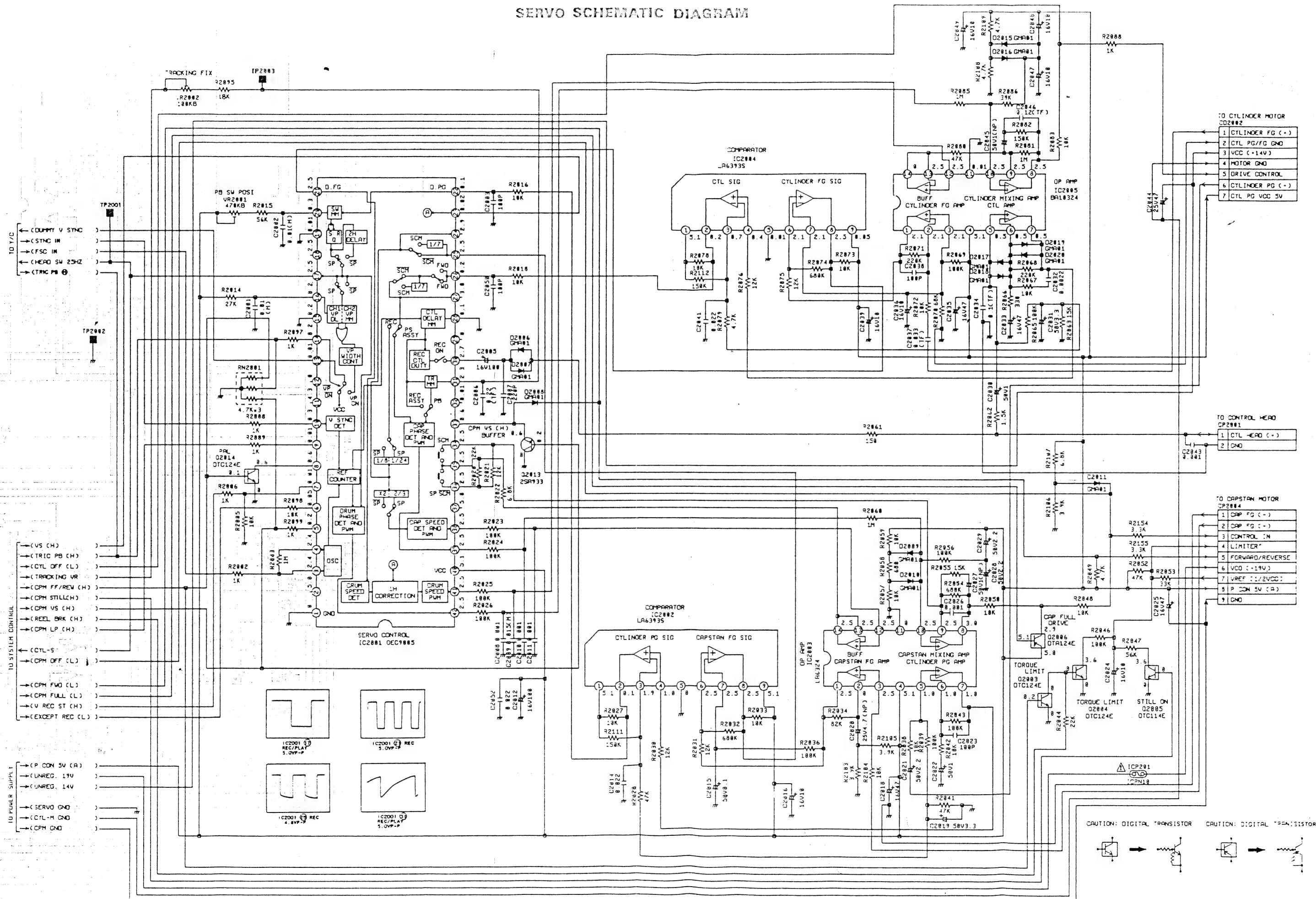
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SYSTEM CONTROL SCHEMATIC DIAGRAM



SYSTEM CONTROL SCHEMATIC DIAGRAM

SERVO SCHEMATIC DIAGRAM

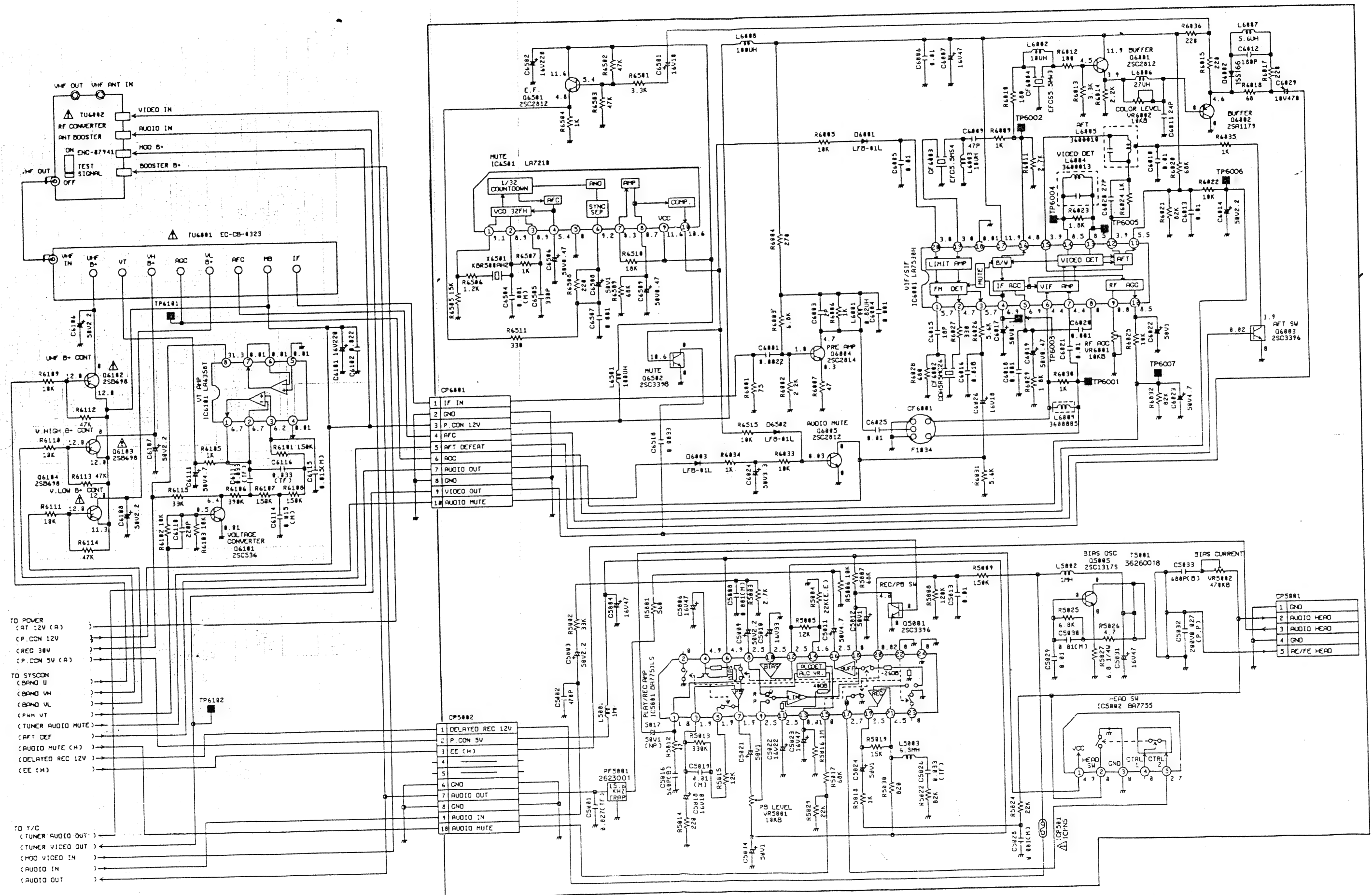


CAUTION: SINCE THESE PARTS MARKED BY Δ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

ATTENTION: LES PIÈCES MARQUÉES PAR UN Δ ÉTANT DANGEREUSES EN POINT DE VUE SECURITE, UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

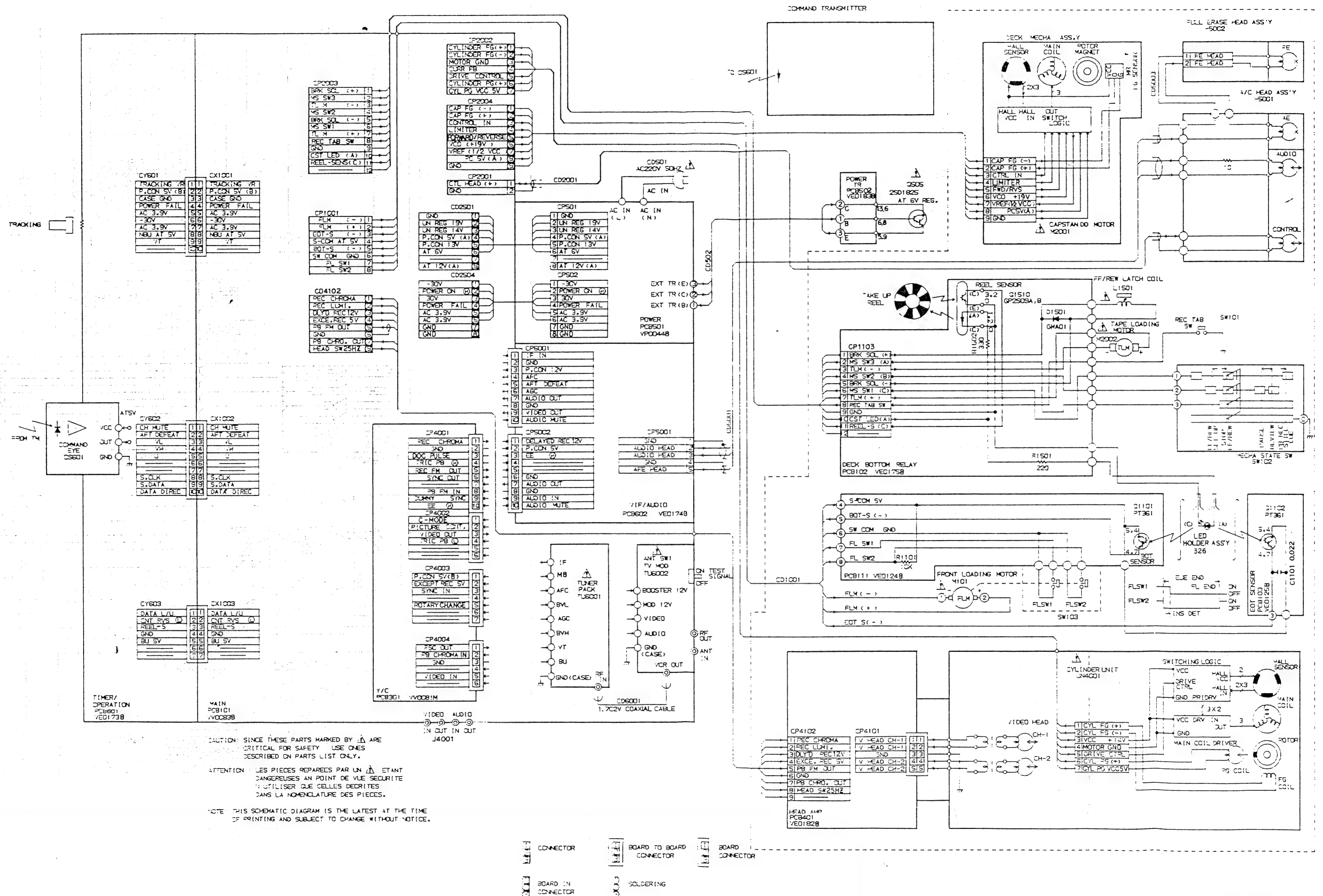
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AUDIO/VIF SCHEMATIC DIAGRAM



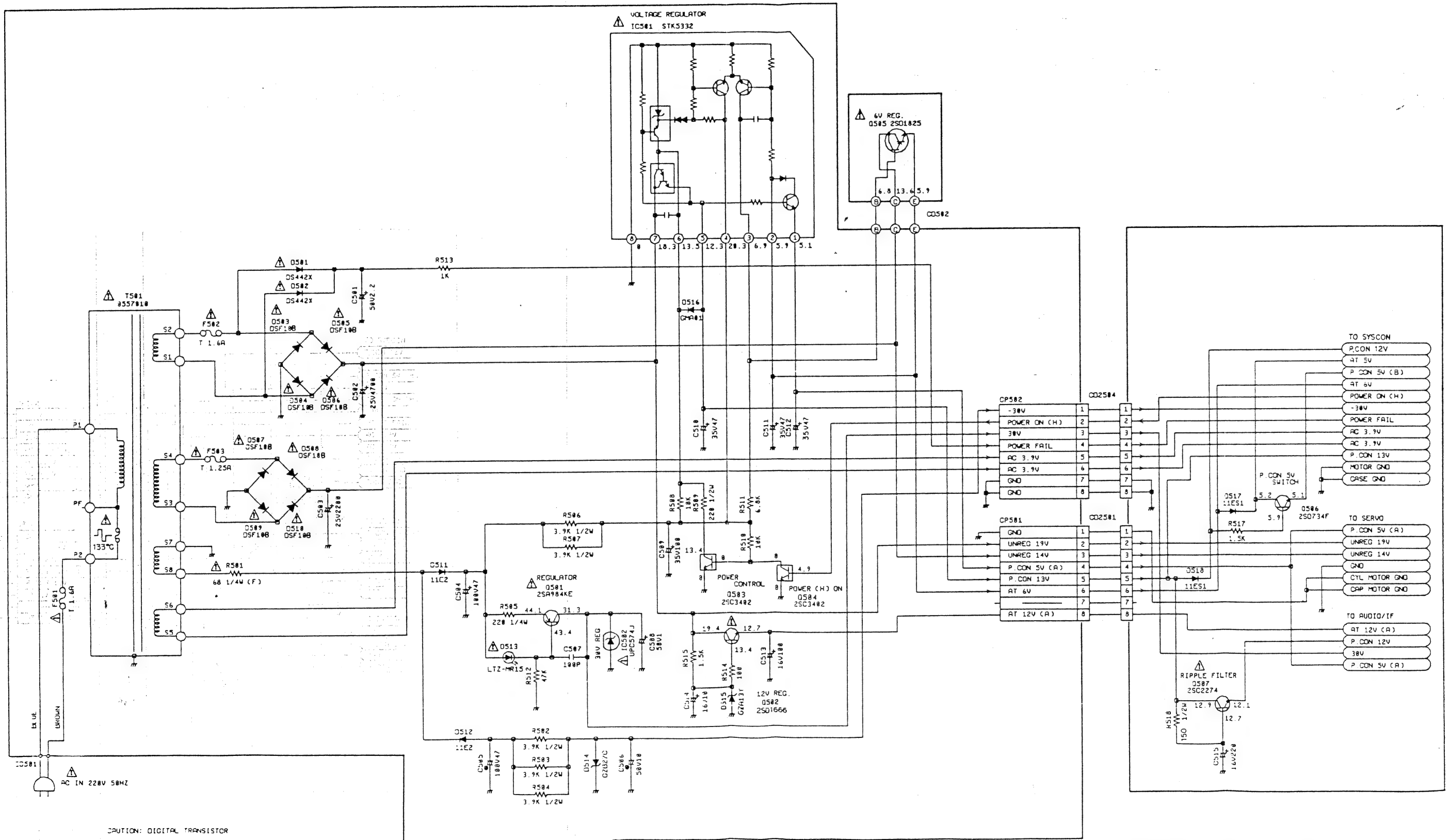
AUDIO/VIF SCHEMATIC DIAGRAM

INTERCONNECTION




INTERCONNECTION

POWER SUPPLY SCHEMATIC DIAGRAM



CAUTION: DIGITAL TRANSISTOR

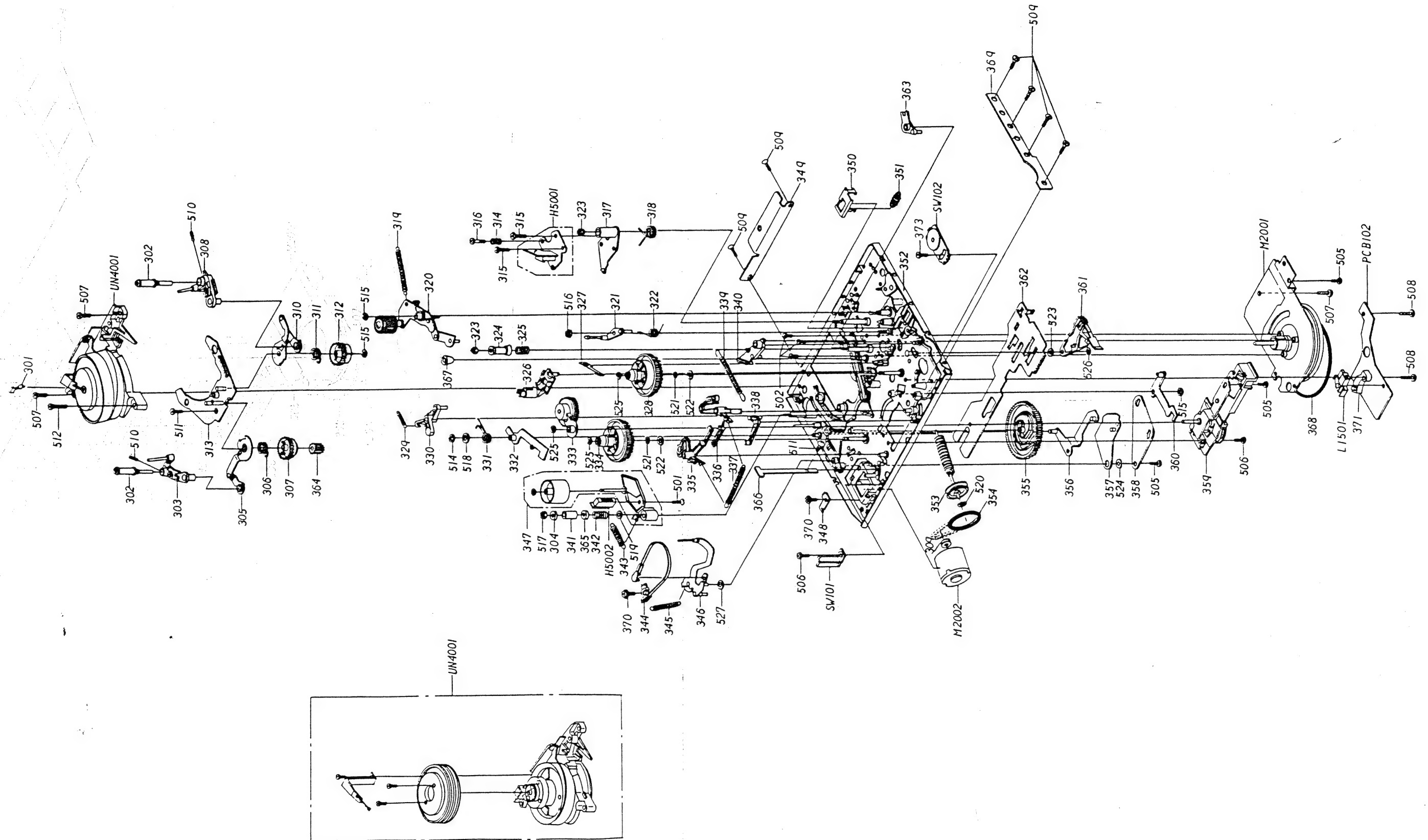
CAUTION: SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

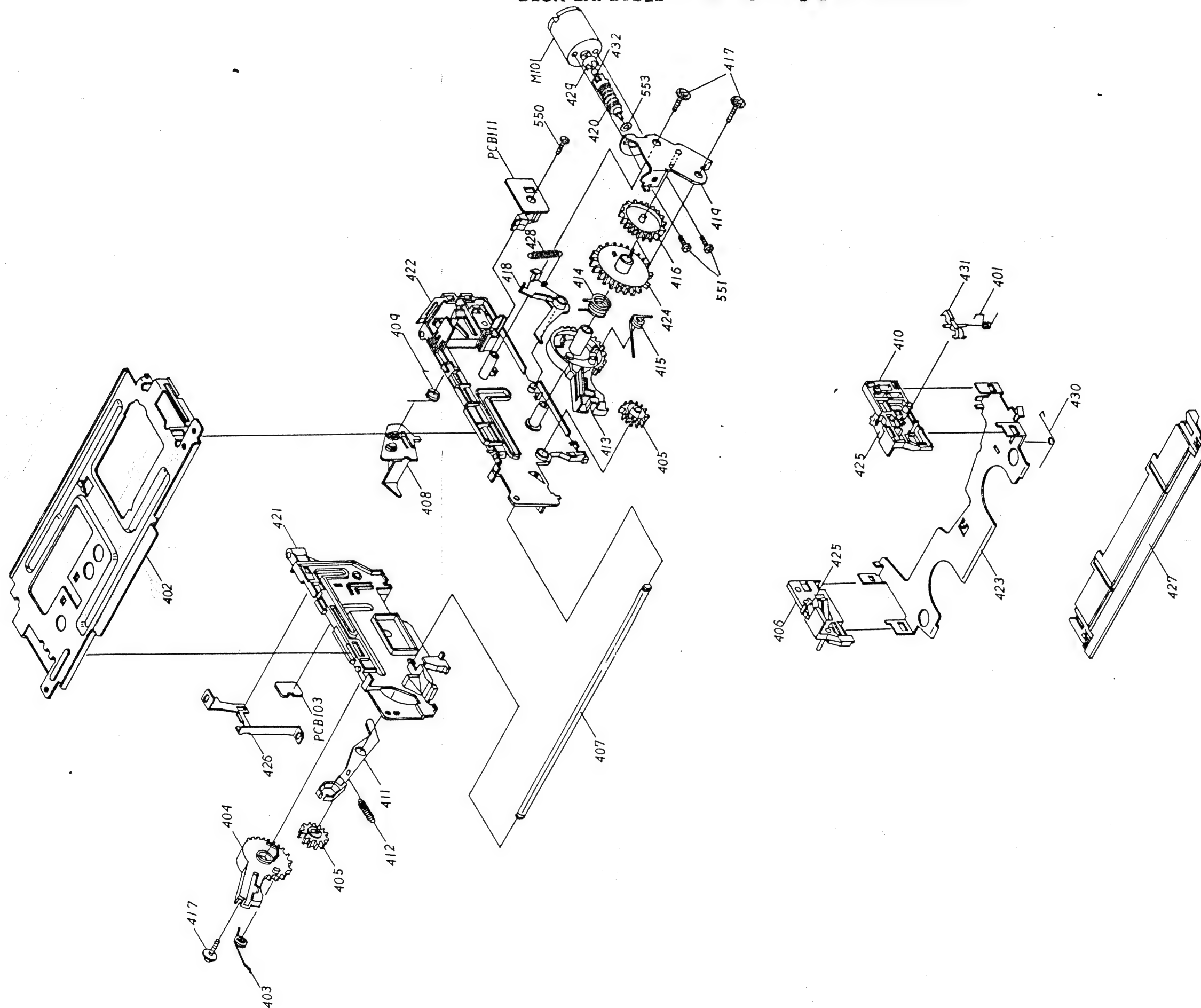
POWER SUPPLY SCHEMATIC DIAGRAM

DECK EXPLODED VIEW



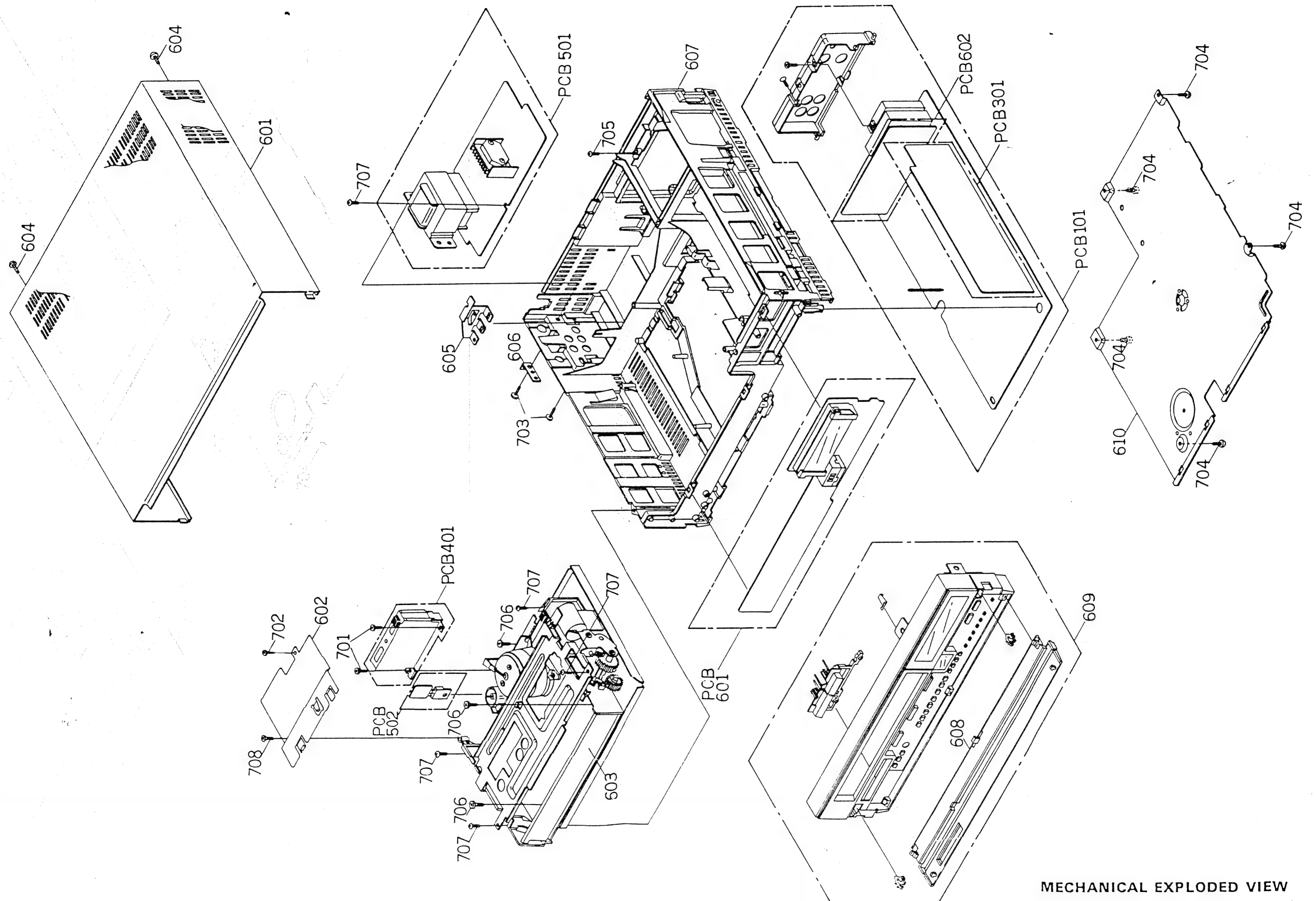
DECK EXPLODED VIEW

DECK EXPLODED VIEW (FL-5) (A41901650K)



DECK EXPLODED VIEW

MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW

DECK REPLACEMENT PARTS LIST

REF.NO	PARTS.NO	DESCRIPTION	REF.NO	PARTS.NO	DESCRIPTION
301	850P500023	SPRING,TR.	414	850P900260	SPRING,CLUTCH
302	850A400040	GUIDE ROLLER ASS'Y	415	850P900262	SPRING,LINK GEAR R
303	850A400038	INCLINED BASE S ASS'Y	416	850P900243	WORM WHEEL
304	850P600128	FLANGE,P1(A)	417	788JKE0005	TAP TITE(P) PAN W7.5 2.6*10 UC
305	850A300018	LOADING ARM L ASS'Y	418	850P900239	LEVER CAM
306	850P800083	SPRING,LOADING GEAR L	419	850A900045	BRACKET,MOTOR ASS'Y
307	850P300055	GEAR,LOADING L	420	850P900245	WORM
308	850A400039	INCLINED BASE R ASS'Y	421	850P900251	BRACKET,SIDE L
309	850P600113	PULLEY,LOADING MOTOR	422	850P900252	BRACKET,SIDE R
310	850A300019	LOADING ARM R ASS'Y	423	850A900044	CASS,HOLDER SUB ASS'Y
311	850P800084	SPRING,LOADING GEAR R	424	850P900244	CLUTCH GEAR
312	850P300056	GEAR,LOADING R	425	850P900257	SPRING CASS,HOLDER
313	850A100006	LOADING BASE ASS'Y	426	850P900271	PLATE,EARTH L
314	850P800071	SPRING,AZIMUTH	427	850P900248	TAPE GUIDE PIECE
315	868X0HH804	CONEHEAD SCREW M3*8 CH	428	850P900273	SPRING,LEVER CAM (A)
316	868512HA34	JOINT SCREW BIND M3*13 CH	429	850P900217	WORM DRIVER
317	850A500003	AC HEAD BASE ASS'Y	430	850P900264	SPRING,LOCKER R
318	850P800070	SPRING,AC HEAD BASE	431	850P900242	REMOVING
319	850P800077	SPRING,PINCH ROLLER	432	850P900229	BUSH RUBBER
320	850A400041	PINCH ROLLER ARM ASS'Y	501	868022D404	BIND M2*4 CH
321	850A400044	LIMITER POST ARM ASS'Y	502	8680K1G604	SEMS K M2.6*6 CH
322	850P800073	SPRING,LIMITER POST	505	868072H604	TAP TITE(S) BIND 3*6 CH
323	850P500010	ADJUST NUT	506	868072H804	TAP TITE(S) BIND 3*8 CH
324	850P600139	POST,SLEEVE 2	507	868072HA04	TAP TITE(S) BIND 3*10 CH
325	850P800076	SPRING,P4	508	868072HA44	TAP TITE(S) BIND 3*14 CH
326	850A700003	LED HOLDER ASS'Y	509	868073H604	TAP TITE(S) FLAT 3*6 CH
327	850A600049	TB BRAKE ARM ASS'Y	510	8685DZD302	SET SCREW 6CUP POINT M2*3 BK
328	850A200007	REEL DISK T ASS'Y	511	868102H804	TAP TITE(P) BIND 3*8 CH
329	850P800079	SPRING,SS BRAKE	512	868072HA64	TAP TITE(S) BIND 3*16 CH
330	850A600037	SS BRAKE ARM ASS'Y	514	868NETW251	E-RING 2.5
331	850P800081	SPRING,TENSION LEVER 2	515	868NETW301	E-RING 3.0
332	850A600047	TENSION LEVER 2 ASS'Y	516	868N008304	NYLON NUT M3
333	850A200004	IDLER ASS'Y	517	868N007304	NYLON NUT M3
334	850A200006	REEL DISK S ASS'Y	518	868WA32A0U	WASHER 3.2*10*T0.8
335	850A600041	MAIN BRAKE ARM L ASS'Y	519	868WA4380Q	WASHER 4.3*8.0*T0.5
336	850A600042	MAIN BRAKE ARM R ASS'Y	520	868WP2647E	POLYSLIDER WASHER 2.6*4.7*T0.13
337	850P800074	SPRING,MAIN BRAKE	521	868WP3144E	POLYSLIDER WASHER 3.1*4.4*T0.13
338	850A600044	MB CONNECT ASS'Y	522	868WP3147J	POLYSLIDER WASHER 3.1*4.4*T0.25
339	850P800091	SPRING,TS BRAKE 2	523	868WP4290Q	POLYSLIDER WASHER 4.2*9.0*T0.5
340	850A600056	TS BRAKE ARM 2 ASS'Y	524	868WP6290U	POLYSLIDER WASHER 6.2*9.0*T0.5
341	850P600130	POST,SLEEVE P1	525	868WQ2647N	POLYSLIDER WASHER(CUT) 2.6*4.7*T0.4
342	850P800075	SPRING,P1	526	868WQ3154N	POLYSLIDER WASHER(CUT) 3.1*5.4*T0.4
343	850P800072	SPRING,FE HEAD ARM	527	868WP3170J	POLYSLIDER WASHER 3.1*7.0*T0.25
344	850A600045	TENSION BAND ASS'Y	550	868101G604	TAP TITE(P) PAN 2.6*6
345	850P800080	SPRING,TENSION ARM	551	8680A1H404	SEMS A M3*4 CH
346	850A400046	TENSION ARM ASS'Y	553	868WP3254J	POLYSLIDER WASHER 3.2*5.4*T0.25
347	850A500004	FE HEAD ARM ASS'Y	C1101	CH4FF03H4Z	CC RHTP050F223Z-KF 22000 PF 25V
348	850P600120	PLATE,ADJUST TENSION	CD1001	068318046A	CORD EIS CONNECTOR 8318046A
349	850P000095	FRAME,DECK BACK	CD2001	068312180A	CORD EIS CONNECTOR 8312180A
350	850P600142	ACTUATOR,PINCH ROLLER	CD5001	068315070A	CORD EIS CONNECTOR 8315070A
351	850P800078	SPRING,PR ACTUATOR	CD5003	068312156A	CORD EIS CONNECTOR 8312156A
352	850A000007	MAIN CHASSIS ASS'Y	CP1103	069R7C0049	CONNECTOR PCB SIDE 52091-1210
353	850A600046	WORM ASS'Y	D1501	D130GMA010	DIODE,SILICON GMA-01
354	850P600125	BELT,LOADING MOTOR	H5001	1523D91005	HEAD,AUDIO CONTROL HVMLA1040
355	850P600141	MAIN CAM	H5002	1543D02002	HEAD,FULL ERASE HVFMD0009
356	850A600048	TENSION LEVER 1 ASS'Y	L1501	02BL000005	ELECTRO MAGNET JTM1002-C
357	850A300020	FAN SHAPED GEAR ASS'Y	M101	1596978003	MOTOR,LOADING MXN13AB112
358	850P600118	PLATE,FS GEAR	M2001	1510998004	CAPSTAN DD UNIT DVX-7605PF
359	850A200005	CLUTCH ASS'Y	M2002	1596958006	MOTOR,LOADING MXN13AB123
360	850A600053	MB,LEVER 2 ASS'Y	PCB102	A42301551	PCB ASS'Y VE0175B
361	850A600050	CA 2 LEVER ASS'Y	PCB103	A41901681	PCB ASS'Y VE0125B
362	850A600036	ACTUATOR ASS'Y	PCB111	(A41901681)	PCB ASS'Y VE0124B
363	850A600039	LIMITER POST LEVER ASS'Y	Q1101	0000800010	TRANSISTOR PHOTO PT361
364	850P300059	GEAR,M	Q1102	0000800010	TRANSISTOR PHOTO PT361
365	850P600129	FLANGE,P1(B)	Q1510	0002G00020	PHOTO COUPLER GP2509AB
366	850P600134	BAND,LOADING MOTOR	R1101	R01116103J	RC ERO-16TJ103A 10K OHM 1/5W
367	850P600122	NUT,ADJUST X	R1501	R01106221J	RC ERO-16TJ221 220 OHM 1/5W
368	850P600124	BELT,REEL	R1502	R01106331J	RC ERO-16TJ331 330 OHM 1/5W
369	850P000094	FRAME,RIGHT SIDE	SW101	0550111012	SWITCH,LEAF LSA-1121-3A
370	868501H804	TAP TITE(S) PAN W6 3*8 CH	SW102	0520343001	SWITCH,ROTARY HMW0423-2
371	850P600111	HOLDER,PHOTO COUPLER	SW103	0550A22003	SWITCH,LEAF MCV0001CW2
373	868491H734	TAP TITE(S) PAN SPW*W7 3*7 CH	UN4001	1590D00042	UNIT,CYLINDER CYPAP0124
401	850P900258	SPRING,REMOVING			
402	850P900256	BRACKET TOP			
403	850P900261	SPRING,LINK GEAR L			
404	850P900246	LINK GEAR L			
405	850P900238	GEAR,SYNCHRO			
406	850A900047	CASS,SIDE L ASS'Y			
407	850P900267	SHAFT,SYNCHRO			
408	850P900240	OPENER			
409	850P900263	SPRING,OPENER			
410	850A900055	CASS,SIDE R ASS'Y			
411	850P900241	FLAP OPENER			
412	850P900259	SPRING,FLAP OPENER			
413	850P900247	LINK GEAR R			

MECHANICAL REPLACEMENT PARTS LIST

REF.NO PARTS.NO DESCRIPTION

601	702JSB0002	CABINET.TOP	
602	752JSA0215	PLATE,HEAD SHIELD M	
603	7230001672	FLAP	
604	788JSE0014	TAPPING(B0) TRUSS	4*12 BK
605	753JSA0015	PLATE,DECK,EARTH	
606	753JSA0014	PLATE,TRANS.EARTH	
607	702JPA0267	CABINET,INSIDE SHEET,RATING	
608	712JPJ0358	DOOR	
609	A42309723	CABINET,FRONT ASS'Y	
610	702JSA0019	CABINET,BOTTOM	

701	8102230604	BIND	M3*6 CH
702	8102230408	BIND	M3*4 RD
703	8102240804	BIND	M4*8 CH
704	8110630804	TAP TITE(P) BRAZIER	3*8 CH
705	8112630A48	TAPPING(B0) BRAZIER	3*14 RD
706	8112240A01	TAPPING(B0) BIND	4*10 NI
707	8112630A08	TAPPING(B0) BRAZIER	3*10 RD
708	8117330A08	TAPPING(B0) FLAT	3*10 RD

---	JPCBVTA01A	INSTRUCTION BOOK	
---	JSCBVTA20A	CAUTION SHEET	
---	791JHA0082	GIFT SHEET	
---	792JHA0144	PACKAGE	
---	793JCD1815	GIFT BOX	

THIS ELECTRICAL PARTS LIST IS STANDARD PART LIST, BUT ACTUALLY
INTERCHANGEABLE PARTS MAY BE USED IN THE UNIT.
SEE THE INTERCHANGEABLE PARTS LIST AFTER THE STANDARD PARTS LIST.

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO	PARTS. NO	DESCRIPTION	REF. NO	PARTS. NO	DESCRIPTION
-RESISTORS-			-SEMI CONDUCTORS (CONT)-		
△ R5C1	R61584680J	R.FUSE 68 OHM 1/4W	IC6001	1030A7530N	INTEGRATED CIRCUIT LA7530N
-CAPACITORS-			IC6101	103006358T	INTEGRATED CIRCUIT LA6358T
C5C2	E031F3472M	CE 4700 UF 25V	IC6501	103S072100	INTEGRATED CIRCUIT LA7210
C5C3	E011F3222M	CE 2200 UF 25V	△ Q501	TA3T0984K0	TRANSISTOR.SILICON 2SA984K-T
C5C32	P341F2273J	CEP 0.027 UF 200V	△ Q502	TD30016660	TRANSISTOR.SILICON 2SD1666
C5C34	E011T5010M	CE 1 UF 50V	Q503	TN3T803001	COMPOUND TRANSISTOR 2SC3402-T
C6506	E011F5R47M	CE 0.47 UF 50V	Q504	TN3T803001	COMPOUND TRANSISTOR 2SC3402-T
-SEMI CONDUCTORS-			△ Q505	TD30018250	TRANSISTOR.SILICON 2SD1825
△ D5C1	D13TDS442X	DIODE.SILICON DS442X-BT	Q506	TD3T007340	TRANSISTOR.SILICON 2SD734-T
△ D5C2	D13TDS442X	DIODE.SILICON DS442X-BT	△ Q507	TC3T02274F	TRANSISTOR.SILICON 2SC2274F-T
△ D5C3	D23TDSF10T	DIODE.RECTIFIER DSF10TB-BT-A	Q601	TN7T803001	COMPOUND TRANSISTOR DTC114E S-T
△ D5C4	D23TDSF10T	DIODE.RECTIFIER DSF10TB-BT-A	Q602	TN7T803001	COMPOUND TRANSISTOR DTC114E S-T
△ D5C5	D23TDSF10T	DIODE.RECTIFIER DSF10TB-BT-A	Q603	TN7T803001	COMPOUND TRANSISTOR DTC114E S-T
△ D5C6	D23TDSF10T	DIODE.RECTIFIER DSF10TB-BT-A	Q604	TN7T803001	COMPOUND TRANSISTOR DTC114E S-T
△ D5C7	D23TDSF10T	DIODE.RECTIFIER DSF10TB-BT-A	Q605	TP7TC03001	COMPOUND TRANSISTOR DTA124E S-T
△ D5C8	D23TDSF10T	DIODE.RECTIFIER DSF10TB-BT-A	Q606	TN7TD03001	COMPOUND TRANSISTOR DTC144E S-T
△ D5C9	D23TDSF10T	DIODE.RECTIFIER DSF10TB-BT-A	Q1001	TD3T011110	TRANSISTOR.SILICON 2SD1111-T
△ D5C10	D23TDSF10T	DIODE.RECTIFIER DSF10TB-BT-A	Q1002	TN7TC03001	COMPOUND TRANSISTOR DTC124E S-T
△ D5C11	D28T011E20	DIODE.SILICON 11E2TA1	△ Q1003	TC3T022740	TRANSISTOR.SILICON 2SC2274
△ D5C12	D28T011E20	DIODE.SILICON 11E2TA1	Q1004	TN7TC03001	COMPOUND TRANSISTOR DTC124E S-T
△ D5C13	D87T2MR150	DIODE.GLASS SEALED LED LTZ-MR15-T77	△ Q1005	TB3T006980	TRANSISTOR.SILICON 2SB698-AA
D514	D940CZ27CP	DIODE.ZENER HZ27CP	Q2003	TN7TC03001	COMPOUND TRANSISTOR DTC124E S-T
D515	D93T01300X	DIODE.ZENER GZA13 X BT	Q2004	TN7TC03001	COMPOUND TRANSISTOR DTC124E S-T
D516	D13TGMA010	DIODE.SILICON GMA-01-BT	Q2005	TN7T803001	COMPOUND TRANSISTOR DTC114E S-T
D517	D28T011ES1	DIODE.SILICON 11ES1	Q2006	TP7TC03001	COMPOUND TRANSISTOR DTA124E S-T
D518	D28T011ES1	DIODE.SILICON 11ES1	Q2013	TA7T009330	TRANSISTOR.SILICON 2SA933-T
D606	002135A010	LED SLP-2368-25	Q2014	TN7TC03001	COMPOUND TRANSISTOR DTC124E S-T
D607	002135A010	LED SLP-2368-25	Q3001	TA3T0608K0	TRANSISTOR.SILICON 2SA608KNP-T
D608	002135A010	LED SLP-2368-25	Q3003	TC3T0536S0	TRANSISTOR.SILICON 2SC536SP-AC
D609	0021320100	LED SLP136C-20B	Q3004	TC3T0536S0	TRANSISTOR.SILICON 2SC536SP-AC
D625	D94UA6R2J2	DIODE.ZENER HZS6R2JB2-T	Q3005	TC3T0536S0	TRANSISTOR.SILICON 2SC536SP-AC
D1001	D17T001320	DIODE.SILICON 1SS132T-77	Q3006	TC3T0536S0	TRANSISTOR.SILICON 2SC536SP-AC
D1004	D17T001320	DIODE.SILICON 1SS132T-77	Q3007	TN3T803001	COMPOUND TRANSISTOR 2SC3402-T
D1005	D13TDS442X	DIODE.SILICON DS442X-BT	Q3701	TN3TC03001	COMPOUND TRANSISTOR 2SC3400-T
D1006	D28T011E10	DIODE.SILICON 11E1TA1-T	Q3702	TC3T0536S0	TRANSISTOR.SILICON 2SC536SP-AC
D2006	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4001	TN3TC03001	COMPOUND TRANSISTOR 2SC3400-T
D2007	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4003	TC3T0536S0	TRANSISTOR.SILICON 2SC536SP-AC
D2008	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4005	TC3T0536S0	TRANSISTOR.SILICON 2SC536SP-AC
D2009	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4006	TC3T0536S0	TRANSISTOR.SILICON 2SC536SP-AC
D2010	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4101	T87A02412K	TRANSISTOR.SILICON 2SC2412K
D2011	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4102	T87A02412K	TRANSISTOR.SILICON 2SC2412K
D2015	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4105	T87A02412K	TRANSISTOR.SILICON 2SC2412K
D2016	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4201	TN3TD03001	COMPOUND TRANSISTOR 2SC3399-AC
D2017	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4204	TC3T0536S0	TRANSISTOR.SILICON 2SC536SP-AC
D2018	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4205	TA3T0608K0	TRANSISTOR.SILICON 2SA608KNP-T
D2019	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4206	TN3TC03001	COMPOUND TRANSISTOR 2SC3400-T
D2020	D13TGMA010	DIODE.SILICON GMA-01-BT	Q4207	TC3T0536S0	TRANSISTOR.SILICON 2SC536SP-AC
D3001	D13TGMA010	DIODE.SILICON GMA-01-BT	Q5001	TN3TC05001	COMPOUND TRANSISTOR 2SC3396(CY)-TA
D4001	D13TGMA010	DIODE.SILICON GMA-01-BT	Q5005	TC1T013170	TRANSISTOR.SILICON 2SC1317-T
D4002	D13TGMA010	DIODE.SILICON GMA-01-BT	Q6001	T83A028120	TRANSISTOR.SILICON 2SC2812-TA
D4003	D13TGMA010	DIODE.SILICON GMA-01-BT	Q6002	T63A011790	TRANSISTOR.SILICON 2SA1179-TA
D4201	D94TA130J2	DIODE.ZENER HZS13JB2-TE	Q6003	TN3TC05001	COMPOUND TRANSISTOR 2SC3396(CY)-T/
D6001	D03RLF801L	DIODE.SILICON LFB-01L	Q6004	T83A028140	TRANSISTOR.SILICON 2SC2814-TA
D6002	D14U001660	DIODE.SILICON 1SS166-03TE	Q6005	T83A028120	TRANSISTOR.SILICON 2SC2812-TA
D6003	D03RLF801L	DIODE.SILICON LFB-01L	Q6101	TC3T0536S0	TRANSISTOR.SILICON 2SC536SP-AC
D6502	D03RLF801L	DIODE.SILICON LFB-01L	Q6102	TB3T006980	TRANSISTOR.SILICON 2SB698-AA
△ IC501	123S953320	INTEGRATED CIRCUIT STK5332	Q6103	TB3T006980	TRANSISTOR.SILICON 2SB698-AA
△ IC502	102190574J	INTEGRATED CIRCUIT UPC574J-T	Q6104	TB3T006980	TRANSISTOR.SILICON 2SB698-AA
IC601	151DT8007A	INTEGRATED CIRCUIT OEC8007	Q6501	T83A028120	TRANSISTOR.SILICON 2SC2812-TA
IC602	131D012250	INTEGRATED CIRCUIT MN1225	Q6502	TN3TC05001	COMPOUND TRANSISTOR 2SC3396(CY)-TA
IC603	101901280M	INTEGRATED CIRCUIT MN1280	- COILS & TRANSFORMERS-		
IC1001	154D50010C	INTEGRATED CIRCUIT OEC0010C	L3001	021673331K	COIL EL0606RA-331K 330 UH
IC1002	106S51954A	INTEGRATED CIRCUIT M51954AL	L3002	021JA6180K	COIL LAL02T180K-T 18 UH TA
IC1003	107S06239N	INTEGRATED CIRCUIT BA6239AN	L3003	021673101K	COIL EL0606RA-101K 100 UH
IC1004	103S063930	INTEGRATED CIRCUIT LA6393S	L3005	021JA6150K	COIL LAL02T150K-T 15 UH TA
IC2001	197D49005A	INTEGRATED CIRCUIT OEC9005	L3006	021673681K	COIL EL0606RA-681K 680 UH
IC2002	103S063930	INTEGRATED CIRCUIT LA6393S	L3702	0326220011	COIL,TRAP 2622001
IC2003	103D063240	INTEGRATED CIRCUIT LA6324	L4001	021JA6470K	COIL LAL02T470K-T 47 UH TA
IC2004	103S063930	INTEGRATED CIRCUIT LA6393S	L4002	021JA6820K	COIL LAL02T820K-T 82 UH TA
IC2005	107D003240	INTEGRATED CIRCUIT BA10324	L4003	021JA68R2K	COIL LAL02T8R2K-T 8.2 UH TA
IC3001	105D386440	INTEGRATED CIRCUIT TA8644N	L4004	021JA68R2K	COIL LAL02T8R2K-T 8.2 UH TA
IC3701	107TC7025L	INTEGRATED CIRCUIT BA7025L	L4007	021673101K	COIL EL0606RA-101K 100 UH
IC4001	104D380140	INTEGRATED CIRCUIT HA118014NT	L4008	021JA6470K	COIL LAL02T470K-T 47 UH TA
IC4002	104D317870	INTEGRATED CIRCUIT HA11787	L4009	021673101K	COIL EL0606RA-101K 100 UH
IC4101	107DG7212S	INTEGRATED CIRCUIT BA7212S	L4101	021JA65R6K	COIL LAL02T5R6K-T 5.6 UH TA
IC5001	107T67751L	INTEGRATED CIRCUIT BA7751LS	L4104	021673101K	COIL EL0606RA-101K 100 UH
IC5002	107S077550	INTEGRATED CIRCUIT BA7755	L4105	021JA6180K	COIL LAL02T180K-T 18 UH TA
			L4106	021JA62R7K	COIL LAL02T2R7K-T 2.7 UH TA
			L4107	021JA6330K	COIL LAL02T330K-T 33 UH TA
			L4108	021673101K	COIL EL0606RA-101K 100 UH
			L4109	021JA65R6K	COIL LAL02T5R6K-T 5.6 UH TA
			L4111	021JA6151K	COIL LAL02T151K-T 150 UH TA

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO PARTS. NO

DESCRIPTION

- COILS & TRANSFORMERS (CONT) -

L4112	021JA6180K	COIL LAL02T180K-T	18	UH	TA
L4202	021673101K	COIL EL0606RA-101K	100	UH	
L5001	021673102K	COIL EL0606RA-102K	1000	UH	
L5002	021673102K	COIL EL0606RA-102K	1000	UH	
L5003	021679682K	COIL EL0909RR-682K	6.8	MH	
L6001	021JA6R82M	COIL LAL02TR82M-T	0.82	UH	TA
L6002	021J96100K	COIL LAL02T100K	10	UH	NA
L6003	021JA6100K	COIL LAL02T100K-T	10	UH	TA
L6004	0336000137	COIL VIDEO IFT	3600013		
L6005	0336000107	COIL VIDEO IFT	3600010(F370A)		
L6006	021JA6270K	COIL LAL02T270K-T	27	UH	TA
L6007	021JA65R6K	COIL LAL02T5R6K-T	5.6	UH	TA
L6008	021673101K	COIL EL0606RA-101K	100	UH	
L6009	0336000057	COIL VIDEO IFT	3600005(E693X)		
L6501	021JA6101K	COIL LAL02T101K-T	100	UH	TA

△ T501	0405570101	TRANSFORMER POWER AC	0557010
T5001	0336260011	COIL BIAS OSC	3626001

- JACK & CONNECTORS -

J4001	0635500004	JACK PLATE	TSJ-4-2YW
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- SWITCHES -

SW603	0504101S01	SWITCH TACT	EVQ-QSV05K
SW604	0504101S01	SWITCH TACT	EVQ-QSV05K
SW605	0504101S01	SWITCH TACT	EVQ-QSV05K
SW606	0504101S01	SWITCH TACT	EVQ-QSV05K
SW607	0504101S01	SWITCH TACT	EVQ-QSV05K
SW608	0504101S01	SWITCH TACT	EVQ-QSV05K
SW611	0504101S01	SWITCH TACT	EVQ-QSV05K
SW612	0504101S01	SWITCH TACT	EVQ-QSV05K
SW613	0504101S01	SWITCH TACT	EVQ-QSV05K
SW614	0504101S01	SWITCH TACT	EVQ-QSV05K
SW615	0504101S01	SWITCH TACT	EVQ-QSV05K
SW616	0504101S01	SWITCH TACT	EVQ-QSV05K
SW617	0504101S01	SWITCH TACT	EVQ-QSV05K
SW618	0504101S01	SWITCH TACT	EVQ-QSV05K
SW619	0504101S01	SWITCH TACT	EVQ-QSV05K
SW620	0504101S01	SWITCH TACT	EVQ-QSV05K
SW621	0504101S01	SWITCH TACT	EVQ-QSV05K
SW622	0504101S01	SWITCH TACT	EVQ-QSV05K
SW623	0504101S01	SWITCH TACT	EVQ-QSV05K
SW624	0504101S01	SWITCH TACT	EVQ-QSV05K
SW625	0504101S01	SWITCH TACT	EVQ-QSV05K
SW627	0504101S01	SWITCH TACT	EVQ-QSV05K
SW628	0504101S01	SWITCH TACT	EVQ-QSV05K
SW629	0504101S01	SWITCH TACT	EVQ-QSV05K
SW630	0504101S01	SWITCH TACT	EVQ-QSV05K
SW631	0504101S01	SWITCH TACT	EVQ-QSV05K
SW632	0504101S01	SWITCH TACT	EVQ-QSV05K
SW633	0504101S01	SWITCH TACT	EVQ-QSV05K
SW634	0504101S01	SWITCH TACT	EVQ-QSV05K

- VARIABLE RESISTORS -

VR601	V014025B01	VR ROTARY	EVU-F3AM20B25
VR2001	V1263Q5B01	VR SEMI FIXED	RHEOAS50HB(H0615C123)
VR2002	V126315B01	VR SEMI FIXED	RHEOA150KB(H0615C119)
VR3001	V126315B01	VR SEMI FIXED	RHEOA150KB(H0615C119)
VR4001	V126313B01	VR SEMI FIXED	RHEOA130FB(H0615C107)
VR4002	V1263H3B01	VR SEMI FIXED	RHEOAJ309B(H0615C109)
VR4003	V146322B01	VR SEMI FIXED	VM6CKPV(15) B200
VR4004	V1263U3B01	VR SEMI FIXED	RHEOAW30EB(H0615C112)
VR4005	V1263H3B01	VR SEMI FIXED	RHEOAJ309B(H0615C109)
VR4006	V1263Q4B01	VR SEMI FIXED	RHEOAS40CA(H0615C117)
VR4101	V126213B01	VR SEMI FIXED	RHEON130BB(H0614C207)
VR4102	V1262H3B01	VR SEMI FIXED	RHEONJ306B(H0614C209)
VR5001	V126214B01	VR SEMI FIXED	RHEON140CB(H0614C213)
VR5002	V1262Q5B03	VR SEMI FIXED	RH0622A023-470KB
VR6001	V126214B01	VR SEMI FIXED	RHEON140CB(H0614C213)
VR6002	V126214B01	VR SEMI FIXED	RHEON140CB(H0614C213)

- P.C. BOARDS ASS'Y -

PCB101	A42309010	PCB ASS'Y	VV00838
PCB301	A42309300	PCB ASS'Y	VV0081M
PCB401	A42309330	PCB ASS'Y	VE0182B
PCB501	A42309020	PCB ASS'Y	VP00448
PCB502	A42309020	PCB ASS'Y	VE0183B
PCB601	A42309270	PCB ASS'Y	VE0173B
PCB602	A42309240	PCB ASS'Y	VE0174B

- MISCELLANEOUS -

△ BT501	1412004001	BATTERY MANGAN	UM-4(SP)
CD501	1204450017	CORD AC BUSH E2N	7FEET

REF. NO PARTS. NO

DESCRIPTION

- MISCELLANEOUS (CONT) -

CD502	1224031102	CORD JUMPER	24031102
CP501	069R980019	CONNECTOR PCB SIDE	52004-0810
CP502	069R980019	CONNECTOR PCB SIDE	52004-0810
CV501	12AL10002A	COVER AC CORD	SB-1235B-U09
CY601	06942A0060	CONNECTOR PCB SIDE	1-173991-0
CY602	06942A0060	CONNECTOR PCB SIDE	1-173991-0
CY603	0694270060	CONNECTOR PCB SIDE	173991-7
CD2002	068327009A	CORD EIS CONNECTOR	8327009A
CD2003	12260C1501	CORD JUMPER	260C1501
CD2004	1226092101	CORD JUMPER	26092101
CD2501	068R78001A	CORD EIS CONNECTOR	8R78001A
CD2504	068R78001A	CORD EIS CONNECTOR	8R78001A
CD4102	068329005A	CORD EIS CONNECTOR	8329005A
CD6001	0682H06001	CORD COAXIAL	82H06001
CD6002	0680L05004	CABLE PAL	PDS05-DP05-3C1.5
CF3701	10114R1703	FILTER CERAMIC	EFCS4R17MS4A
CF6001	1027038R91	FILTER SAW	F1034
CF6002	101225R502	FILTER CERAMIC	CDA5.5MC26
CF6003	101105R501	FILTER CERAMIC	EFCS5R5MS4
CF6004	101115R502	FILTER CERAMIC TRAP	EFCS5R5MW3
CP1001	0694180060	CONNECTOR PCB SIDE	172681-8 UX-V
CP2001	0694120060	CONNECTOR PCB SIDE	172681-2
CP2003	06957C0010	CONNECTOR PCB SIDE	SLEM12S-2U
CP2004	0695790010	CONNECTOR PCB SIDE	SLEM9S-2U
CP4001	069RFA0040	CONNECTOR PIN	5530-10B
CP4002	069Q160179	CONNECTOR PCB SIDE	CPB1806-0101
CP4003	0697170189	CONNECTOR PCB SIDE	TXX-P07P-G1
CP4004	069Q160179	CONNECTOR PCB SIDE	CPB1806-0101
CP4101	069R250099	CONNECTOR PCB-PCB	53027-0510
CP4102	0694290Q20	CONNECTOR PCB SIDE	172430-9
CP5001	0694150060	CONNECTOR PCB SIDE	172681-5 UX-V
CP5002	069Q1A0179	CONNECTOR PCB SIDE	CPB1810-0101
CP6001	06971A0189	CONNECTOR PCB SIDE	TXX-P10P-G1
CX1001	06942A0070	CONNECTOR PCB SIDE	1-173992-0
CX1002	06942A0070	CONNECTOR PCB SIDE	1-173992-0
CX1003	0694270070	CONNECTOR PCB SIDE	173992-7
DL3001	10A24R436	DELAY LINE GLASS	SE-2244R
DL4001	10A41R43C	DELAY LINE GLASS	ADL-CL144R
△ F501	080ET1R601	FUSE	BET1.6 A(T) 250V
△ F502	080ET1R601	FUSE	BET1.6 A(T) 250V
△ F503	080ET1R201	FUSE	BET1.25A(T) 250V
FH501	067H000003	HOLDER FUSE	773JEE0004
△ ICP201	0847TOR402	IC PROTECTOR	ICP-N10T104
△ ICP501	0847TR2501	IC PROTECTOR	ICP-N5T104
OS601	0771006003	REMOTE RECEIVER	EUR-3694
PF3001	1147L15605	FILTER LOW PASS	47L15605
PF3002	1147B44606	FILTER BAND PASS	47B44606
PF3003	1147B50604	FILTER BAND PASS	47B50604
PF4001	1147L30603	FILTER LOW PASS	47L30603
PF4002	1147L30603	FILTER LOW PASS	47L30603
PF4101	1147H14605	FILTER HIGH PASS	47H14605
PF4201	103802R102	DELAY	3802R102
PF5001	032623001A	COIL TRAP	2623001
RN1001	110E447202	R NETWORK	RN3H5A472J
RN1002	1101322302	R NETWORK	EXB-Z4E223J
RN1003	1101322302	R NETWORK	EXB-Z4E223J
RN1004	1101322302	R NETWORK	EXB-Z4E223J
RN2001	110E347202	R NETWORK	RN3H4A472J
TC601	0100514001	C CERAMIC TRIMMER	TZ03R300E
TM601	0761081001	TRANSMITTER	EUR53460
TH4001	DS1FL802S0	THERMISTOR	ERT-D2ZHL802S
△ TU6001	0145201009	TUNER UHF-VHF	EC-C8-0323
△ TU6002	0151101008	RF CONVERTER	ENC-87941
V601	096270R302	TUBE FLUORESCENT DISPLAY	FIP11SM7
X601	100E4R1906	CRYSTAL	CSA-309 4194EE
X602	100D32R801	CRYSTAL	DT-26S 32.76KHZ
X1001	100D4R0002	CERAMIC OSCILLATOR	PRS-4.00RM
X3001	10064R43B2	CRYSTAL	H49U4.43V
X6501	1003R50001	CERAMIC OSCILLATOR	KBR-500AH2

RESISTOR

RC.....CARBON RESISTOR

CAPACITORS

CC.....CERAMIC CAPACITOR
 CE.....ALUMI ELECTROLYTIC CAPACITOR
 CP.....POLYESTER CAPACITOR
 CPP.....POLYPROPYLENE CAPACITOR
 CPL.....PLASTIC CAPACITOR
 CMP.....METAL POLYESTER CAPACITOR
 CMPL.....METAL PLASTIC CAPACITOR
 CMPP.....METAL POLYPROPYLENE CAPACITOR
 CST.....STYROL CAPACITOR

INTERCHANGEABLE PARTS LIST

NOTE: THE FOLLOWING PART(S) MAY BE SUBSTITUTED FOR PARTS INDICATED IN THE BASIC PART(S) LIST (WITH THE SAME REF.NO.). THESE PARTS SHARE THE SAME ELECTRICAL CHARACTERISTICS AND OTHER ELEMENTS FOR COMMON USAGE. EITHER PART NUMBER MAY BE USED IN THIS UNIT.

REF.NO	DESCRIPTION	DESCRIPTION
TH4001	ERT-D2ZHL802S (DS1FL802S0)	ERT-D2FHL802S (DS10L802S0)